

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2380.—VOL. LI.

LONDON, SATURDAY, APRIL 2, 1881.

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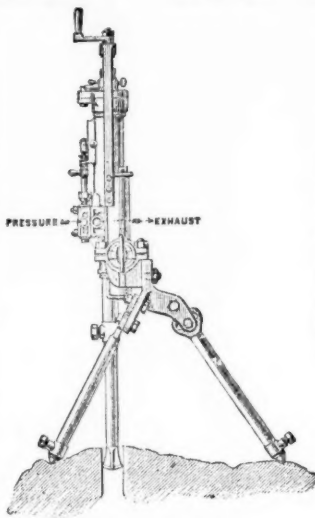
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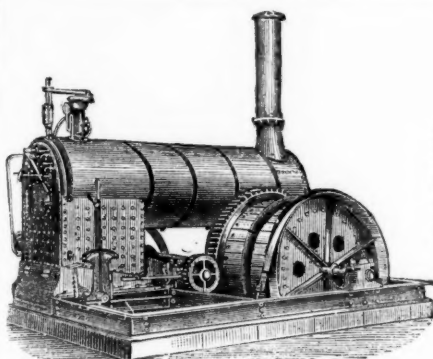


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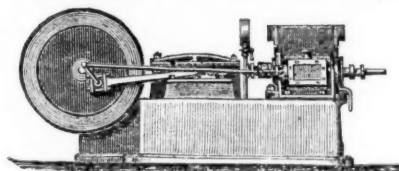
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THE PATENT "ECLIPSE" ROCK-DRILL

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THE BEST METAL FOR
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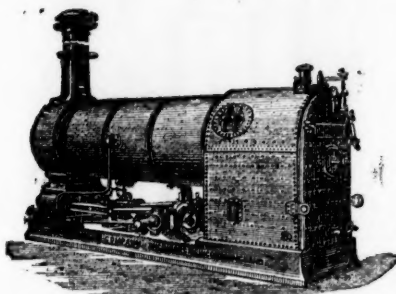
SUMNER and EMERSON STREETS, SOUTHWARK,
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HIGHEST AWARD MELBOURNE EXHIBITION, 1881.
ROBEY & CO., ENGINEERS, LINCOLN.

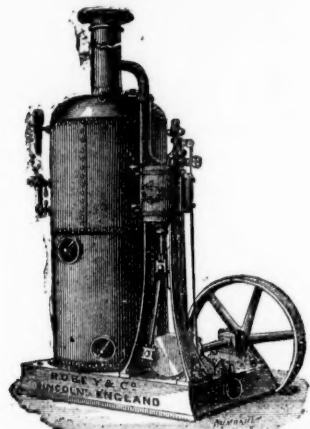
NOTICE.

TO COLLIERY PROPRIETORS, MINE OWNERS, &c.

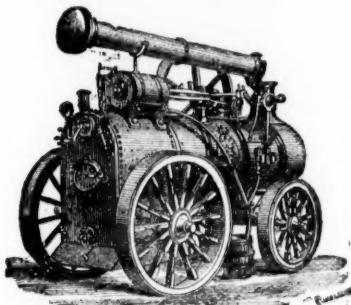
The Patent "Robey" Mining Engine



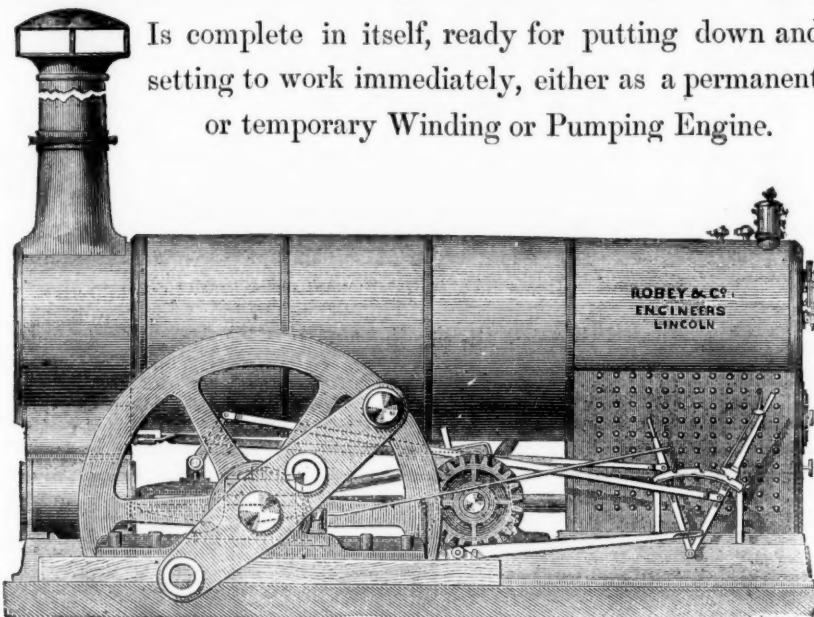
THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED.
 4 to 50-horse power.



VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED.
 1½ to 16 horse power.



SUPERIOR PORTABLE ENGINES,
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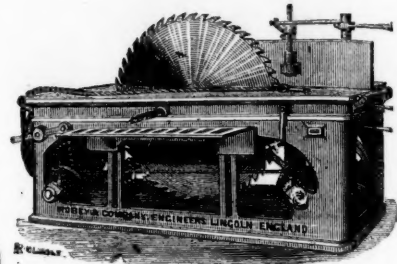
Is complete in itself, ready for putting down and setting to work immediately, either as a permanent or temporary Winding or Pumping Engine.

ALL SIZES KEPT IN STOCK, FROM 6 TO 50-H.P. NOMINAL.

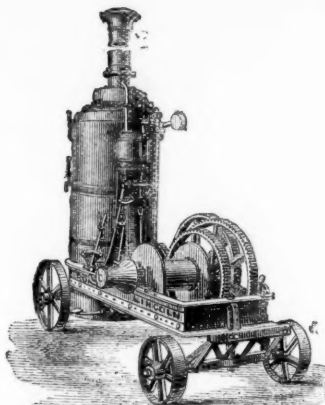
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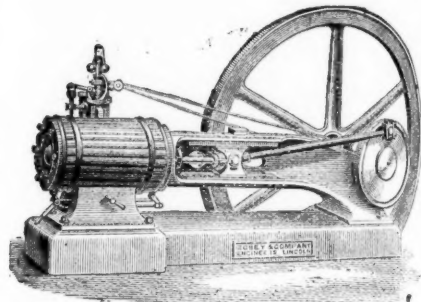
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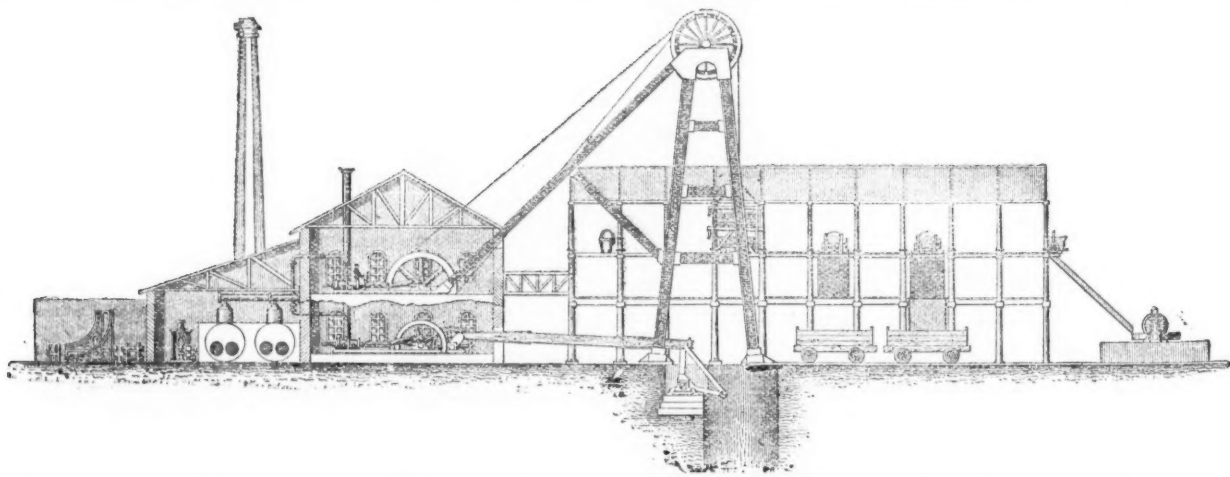
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 IMPROVED BARROW LIFT, or VERTICAL HOISTING ENGINE.



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Engineers and Contractors for every description of Plant for Collieries, Mines, and Brickworks.

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WINDING, HAULING, AND PUMPING ENGINES; AIR COMPRESSORS; DIRECT-ACTING STEAM PUMPS; VENTILATING FANS; SEMI-PORTABLE BOILERS AND ENGINES COMBINED; PIT-HEAD PULLEYS; WIRE ROPES; WROUGHT-IRON HEAD GEAR, CAGES, and SCREENS; BOILERS; PATENT DETACHING HOOKS; COAL WASHING MACHINES; STEAM HAMMERS; STEAM CAPSTANS; PUMPS; VALVES. PATENT BRIQUETTE MACHINES (for Compressed Fuel).

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PLANS, SPECIFICATIONS, AND ESTIMATES FOR COMPLETE PLANTS ON APPLICATION.

BEST DESIGNS, WORKMANSHIP, and MATERIAL THROUGHOUT.

N.B.—Experienced workmen sent out, if required, to Erect or Manage. Considerable Saving in Prices by dealing direct with us, having for many years been chiefly engaged in the manufacture of Colliery, Mining, and Brickmaking Plants.

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AWARDED THE ONLY GOLD MEDAL,

AT SYDNEY EXHIBITION, 1880,
FOR STEEL CASTINGS.

AWARDED THE ONLY GOLD MEDAL AT PARIS EXHIBITION,
1878, FOR CRUCIBLE STEEL CASTINGS. FIRST PRIZE
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1875 AND 1876. AND THE HIGHEST AWARD FROM THE
MINING INSTITUTE OF CORNWALL, 1878.

AWARDED THE ONLY GOLD MEDAL

AT SYDNEY EXHIBITION, 1880,
FOR STEEL CASTINGS

ATTERCLIFFE, SHEFFIELD,

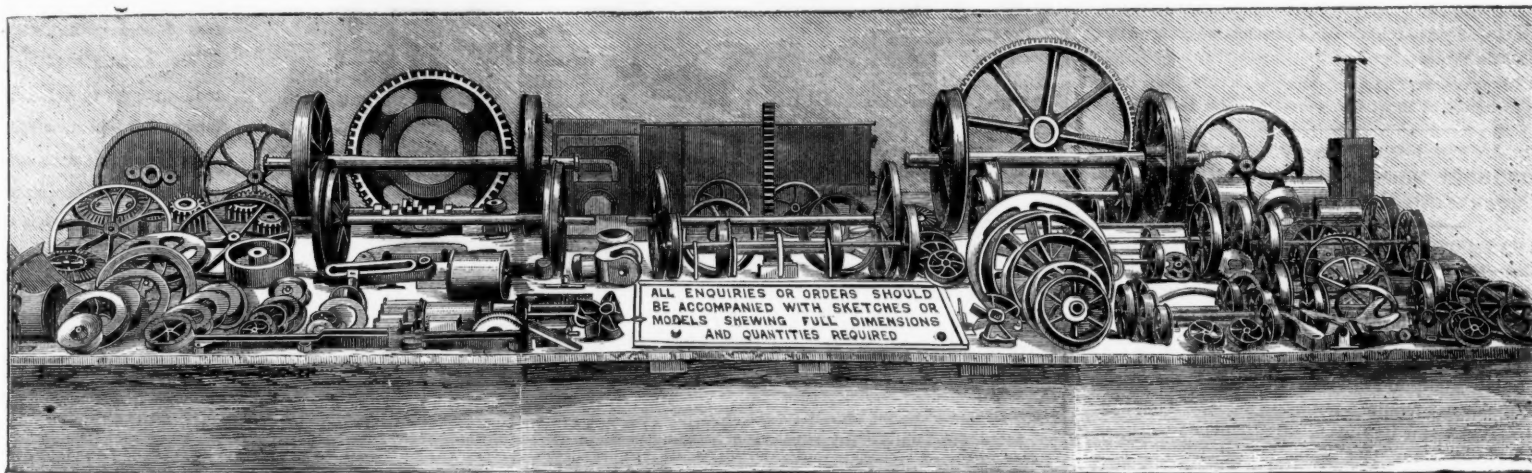
MANUFACTURERS EXCLUSIVELY OF

Crucible and Cast Steel Castings, FOR Engineering & Mining Purposes,

AND ARE THE SOLE MAKERS OF

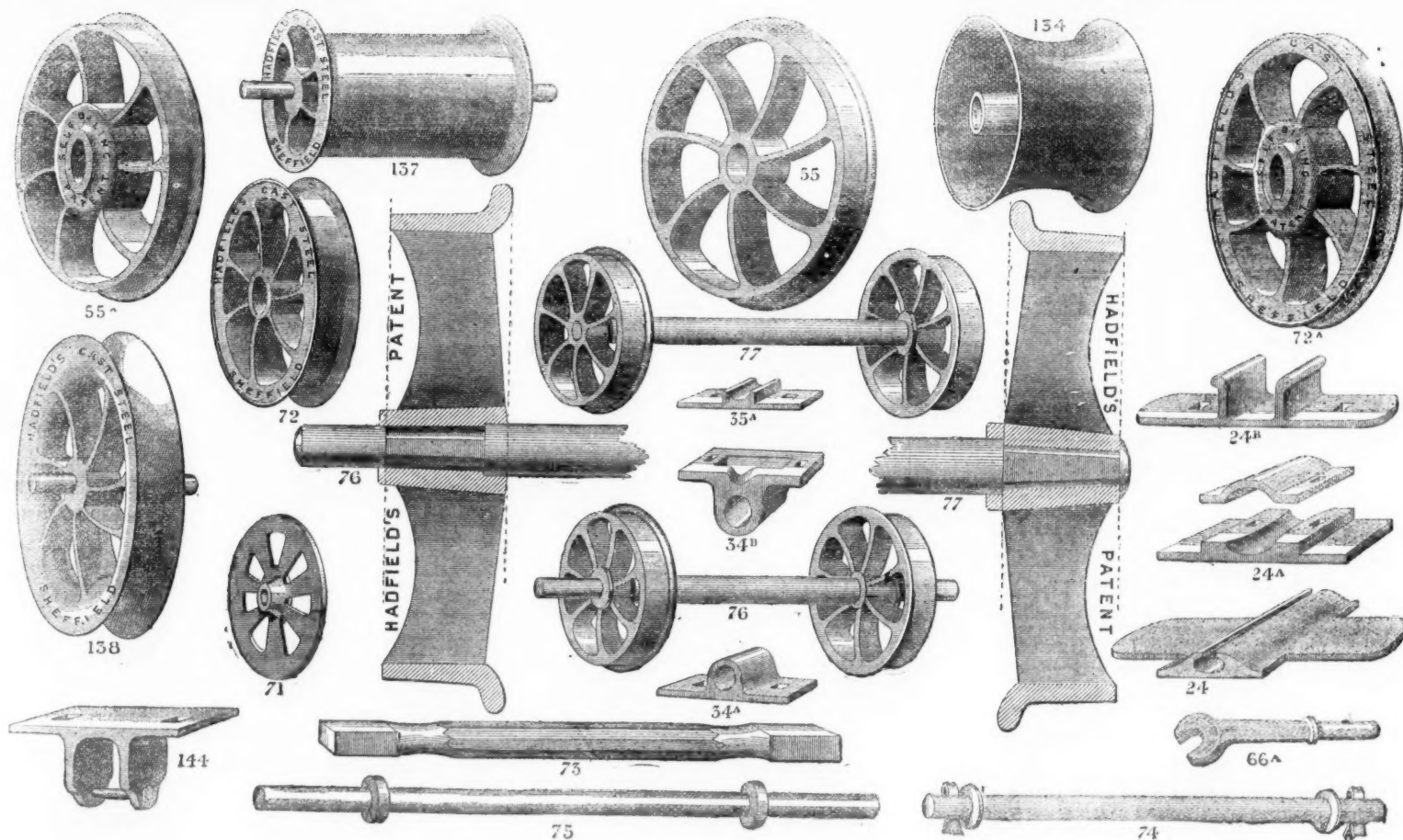
HADFIELD'S CAST STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.



ALL ENQUIRIES OR ORDERS SHOULD
BE ACCOMPANIED WITH SKETCHES OR
MODELS SHewing FULL DIMENSIONS
AND QUANTITIES REQUIRED

N.B.—Prices for Sets of Wheels and Axles fitted complete, forwarded on receipt of diameter of wheel
on tread, depth of tread, real gauge, and thickness of axles and rolling load.



[This Sheet of Drawings is Copyright.]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very cheaply fitted on, and run exceedingly true.

We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES the adoption of which will prove highly advantageous.

MACHINE MOULDED STEEL GEAR WHEELS OF EVERY DESCRIPTION.



PARIS, 1875.
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH, 1867.
SILVER MEDAL, 1867

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10, 28'30, 27'10, 28'40, 28'70 metres. Total advance of south heading during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL; and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without shock upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

McKEAN AND CO.

ENGINEERS

5, RUE SCRIBE, PARIS

MANUFACTURED FOR MCKEAN AND CO. BY MESSRS P. AND W. MACLELLAN, "CLUTHA IRONWORKS" GLASGOW.



By a special method of preparation this leather is made solid, perfectly close in texture and impervious to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

HEPBURN AND GALE,

TANNERS AND CURRIERS,

LEATHER MILL BAND AND ROSE PIPE MANUFACTURERS

LONG LANE, SOUTHWARK LONDON

Prize Medals, 1851, 1855, 1873

MILL BANDS, ROSE, AND LEATHER FOR MACHINERY PURPOSES.

THE UNDERSIGNED, having secured the Grants of several VALUABLE MINERAL PROPERTIES (TIN AND COPPER), in the St. Blazey District, in the vicinity of Fowey Consols, &c., is DESIROUS of OBTAINING the CO-OPERATION of CAPITALISTS for their EXPLORATION. There is little or no risk involved in the undertakings, and the capital required in each case is very limited. R. SYMONS

MAP OF CALLINGTON, CALSTOCK, AND TAVISTOCK MINING DISTRICTS. Proposed to be published by subscription, a MAP of the ABOVE DISTRICTS, showing the names and boundaries of all existing sets, lodes, cross-courses, and every other matter which such a map should contain. Persons disposed to patronise the publication—at One Guinea per copy—will please send their names as early as possible to me. R. SYMONS, Mineral Surveyor, Truro. February 3rd 1881.

TO PARENTS AND GUARDIANS.

AN ELIGIBLE OPPORTUNITY is now offered for the SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA. He will be enabled to obtain his profession as a Solicitor in five, or if he be a Graduate in three years. Cost of living about £150. In the meantime he will have active work, and obtain a knowledge of the Dominion, which is destined to become one of the most prosperous of the Colonies. Premium, £100 sterling. HERBERT C. JONES, Canada Land and Loan Agency.

32, Wellington-street, Toronto.

ESTABLISHED 1852.

SYBRY, SEARLS, AND COMPANY,

MANUFACTURERS OF THE

CELEBRATED MINING STEEL, BRANDED CAST STEEL FOR TOOLS, SHEAR, BLISTER, AND SPRING STEEL.

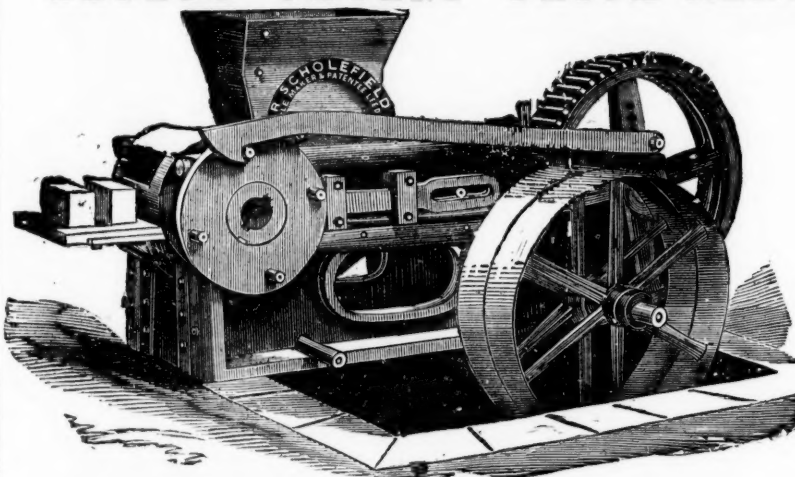
Cast Steel Drills.
Solid Steel Hammers.
Steel Picks.
Steel Wedges.

Saws.
Files.
Wagon Springs.
Shovels.

Anvils.
Vices.
Bellows.
Engineers' Tools.

CANNON STEEL WORKS, SHEFFIELD.

R. SCHOLEFIELDS LATEST PATENT BRICK-MAKING MACHINE.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which, instead of storing at the pit's mouth (and making acres of valuable land useless) is at once made into bricks at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of

production, and the hands required to make 10,000 pressed bricks per day:—

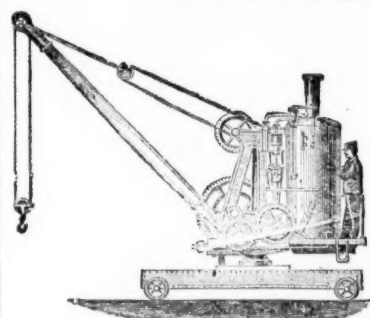
2 men digging, each 4s. per day	...	£0 8 0
1 man grinding, 4s. 6d. per day	...	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	...	0 2 0
1 boy greasing, 1s. 6d. per day	...	0 1 6
1 engine-man, 5s. per day	...	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	...	0 4 0

Total cost of making 10,000 pressed bricks ... £1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)
N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging. As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

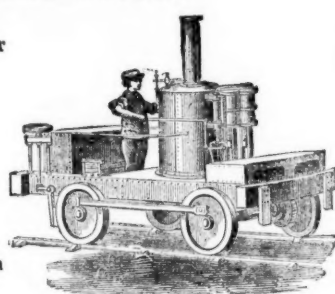
THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.
SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS
KIRKSTAL ROAD LEEDS.

CHAPLINS' PATENT STEAM ENGINES AND BOILERS. PRIZE MEDAL, INTERNATIONAL EXHIBITION.



STEAM CRANES,
Portable or Fixed, for Railways, Wharves, &c., for unloading
COAL BALLAST, &c.,
1 ton, 2½ cwt., to 30 tons.

LOCOMOTIVES,
6 to 27-horse power. For Steep Inclines and Sharp Curves.
Gauge from 2 feet upwards.
Geared to draw very heavy weights in proportion to their power, and SPECIALLY
SUITABLE FOR



Contractors' Work, Railway Sidings, Coal Mines, Quarries, Gasworks, &c.

These Cranes were selected by H.M. Commissioners to receive and send away the Heavy Machinery in the International Exhibitions 1862, 1871, and 1872.

WIMSHURST, HOLLOCK, & CO., ENGINEERS.

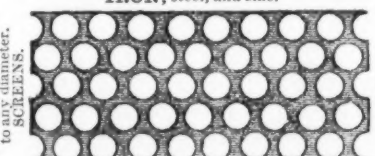
Works: REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (near Stepney Station)

PERFORATORS, WIRE WEAVERS, AND GENERAL IRONMONGERS,

J. AND F. POOL,

COPPERHOUSE, HAYLE, CORNWALL.

Millimeter holes perforated in sheet-copper, brass, IRON, steel, and zinc.

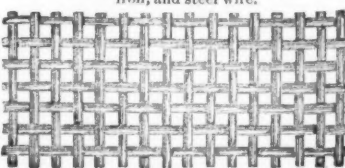


JIGGER-PLATES AND CYLINDRICAL SIEVES.

Manufacturers of Stamps-Grates, Sieves, and Riddles, for Mining and other purposes, by Self-acting Steam Machinery.

CERTIFICATE OF MERIT
Awarded by the
Mining Institute of Cornwall
for
SIEVES AND GRATES,
Shown at the Annual Exhibition, 1879.

Lineal holes per inch woven in copper, brass, iron, and steel wire.



JIGGER-BOTTOMS AND CRUSHER SIEVES.

SPECIALITY.—Thick Copper, Brass, Zinc, and IRON Perforations, Classifying-Sieves, Pierced Pulveriser and Stamps-Grates up to 324 holes to the square inch, Conical-hole Copper Jigger Plates and round bottom "Sifts," Spigot and Faucet Zinc Air-pipes, &c.

Original Correspondence.

THE LEAD TRADE.

SIR,—Since our last a very large lot of Spanish lead has changed hands, and the market is a falling one, and flat. The following lots have been sold during the last fortnight:—

140 tons Spanish, 60 ozs.	£14 17 6
149 " rich.....	15 0 0
114 " ".....	15 0 0
100 " 12 ozs.	14 15 0
55 " antimonial	14 10 0
100 " rich.....	15 0 0
400 " ".....	14 17 6
200 " ".....	14 17 6
60 " 40 ozs.	14 15 0

Newcastle-on-Tyne, March 29.

STOCKS.

COLD PROCESS OF COPPER EXTRACTION.

SIR,—Your correspondent "P. H. R.," in the Journal of March 19, who desires information respecting the cold or wet process of extracting copper, may be assured that it is most successful. Of late years great improvements have been introduced, and the process as it at present stands is looked upon as one of the most perfect for the treatment of cupreous pyrites.

GEO. WM. H. CLEMENTS.

Portugalete, Bilbao, March 24.

COMPRESSED AIR LOCOMOTIVES.

SIR,—I have read with much interest the details published during the past few weeks of two distinct systems of compressed air locomotion more especially adapted for tramways—the one invented by Mr. Mękarski, a Pole, I presume, and the other by Colonel Beaumont, an Englishman—and I think we are again compelled to acknowledge that the foreigner has distanced the Englishman, and that whilst the arrangement of Colonel Beaumont looks pretty enough in theory, the foreigner's system is the only one that has any claim to practical utility. In all compressed air systems of traction the great necessity is to avoid leakage, and it must be obvious to every engineer that in this respect the Mękarski is far superior to the Beaumont. The Mękarski water chamber serves as a regulator of the most efficient kind, so that theoretically as well as practically the leakage is almost inappreciable, and does not increase with the age of the engine, whilst a Beaumont engine may be comparatively perfect when first started, but will be rendered leaky and worthless with a few weeks use.

But the absence of leakage is not the only recommendation possessed by the Mękarski engine, for the damp air would be a much better lubricant for the pistons than dry air could possibly be, and would thus reduce the wear and tear of those parts materially, and cause the whole machinery to work more smoothly. Regarding each engine in its entirety, I consider the Mękarski the most practical and the most economic, and I think that if compressed air locomotion is to be used at all the Mękarski is, of the engines yet brought forward, undoubtedly the best. There is, however, another question which may affect the adoption of either so far as the metropolitan lines are concerned, and that is the limitation of speed permitted with engine power, and upon this point I should like to know whether compressed air would be under the same restrictions as steam. A tram-car, with a man walking constantly 100 yards ahead of it with a red flag, would be objectionable to the majority of travellers, especially to those using the cars as a means of reaching their places of business. This raises the question whether the air-engines are really less under control than horses, and I think that all that has been written on the subject shows that machine power is the safer. This being so the restriction might, at least, be modified, so as to permit a speed equal to the average speed attained by the cars at the present time.

March 29.

LUBRICANT.

THE POTOSI MEETING—THE SPECIMENS.

SIR,—Will you kindly allow me through the medium of the Journal to point out to that shareholder at the Potosi meeting on Wednesday who took an exceedingly rich specimen of gold quartz to look at, and forgot to return it, that he will not have an opportunity of indulging his proclivities a second time, as all specimens for the future will be under lock and key. Can he wonder at the poor ignorant blacks at the mines being untrustworthy when he sets them such a civilised example in the City of London.

E. L. J. RIDSDALE, Chairman of the Potosi Mining Company.
Royal Mint, Tower Hill, March 31.

EUREKA (NEVADA) MINING DISTRICT.

SIR,—I beg to forward you my usual report from this mining centre:—

The Industry Company are now sinking a winze 35 ft. from the tunnel, with very flattering prospects for ore.

The Silver Peak Company commenced work again yesterday. The tunnel is now in a distance of 600 ft.

BOSTON AND EUREKA COMPANY.—The above-named company was recently formed in Boston, they having purchased the Venture series of mines, which are located some 1000 ft. north of the Williamsburg Mine on the north end of Adams Hill. Ore can be traced from the Venture to the Williamsburg Mine. Yesterday Superintendent N. Diamond brought us in some samples of the ore, which look as well as any in the district. He informs us that his company will sink a working shaft, and soon commence doing good work on their claims. Mr. Diamond is very sanguine of making a valuable property of the Venture series.

There need be no more apprehensions of furnaces shutting down for the want of charcoal.

The charcoal supply at the Eureka Consolidated is sufficient for 15 days, and if the present good weather should continue a few days longer no fear need be entertained of shutting down the furnaces.

The Eureka Tunnel is now in 1630 ft., with the formation still in shale.

The Excelsior Mine is shipping ore to the Eureka Consolidated works.

The present fine weather makes the "honest miner," who has been laying off all winter, think it is time to be getting out on the hills for prospecting work.

Every fine day we get now lessens the charcoal scare.

We were pleased to see the genial face of Griff J. Griffith, superintendent of the Wales Consolidated, in the Sentinel office yesterday. Mr. Griffith has just returned from an extended visit in the east and west, paying the latter section his compliments before going to his mountain home. During his absence he visited the mines of Colorado, especially those at Leadville, a camp of which he speaks very highly, not only for what it has yielded in the past, but what it is likely to produce in the future. In the eastern cities he found that ignorance generally prevailed with regard to Eureka district, very few indeed knowing where it was located. They had heard something about a Eureka Consolidated Mine paying an enormous sum in dividends, but could not place it very definitely. Mr. Griffith speaks encouragingly of the Wales Consolidated, and as soon as the weather and condition of the roads up the mountains permit the machinery for the new hoisting works now at the depot will be transferred to the mine and erected with all possible dispatch.

London, March 29.

RUBY HILL.

MARBELLA IRON COMPANY.

SIR,—Referring to some letters that have appeared in last week's Mining Journal on this subject, will you permit me to state a fact to which I called attention at the last general meeting of the company? The price of the shares in this company seems to vary with the price of Scotch pigs. Now, considering that the company are selling, I believe, nearly the whole of their production to America, and have contracts in fact extending a long way ahead, it is evident that they are wholly and entirely independent of the British market. They have been selling and are selling their ore to America at a large profit; why, therefore, the shares should fluctuate with the price of Scotch pigs is a puzzle to—

A LARGE SHAREHOLDER.

St. Swithin's-lane, March 28.

MARBELLA IRON ORE COMPANY.

SIR,—I have to thank "Iron" for his note in last week's Mining Journal. I may inform him that a very large proportion of Marbella shares are held by first-class Scotch firms in the coal and iron trade. I cannot understand why the shares, 10/- paid, should be standing at 8s. to 8½s. The company I know are presently earning a good dividend, and their output of ore is daily increasing, as is also the demand. My strong advice to those who wish to purchase a sound share is to buy Marbella and lock them fast, and I am certain that

their capital will be doubled within one year, as well as having a good dividend.

A SCOTCH MINING ENGINEER.

THE GREAT POLGOOTH MINES.

SIR,—Whence come "these counterfeit presentments" of two mines? Which is the Great Polgooth, so famed for its past enormous returns of tin? I find on enquiry that the "arm of the River Fal," referred to in the prospectus of the Great Wheal Polgooth, is four miles distant from the mine hitherto known as Great Polgooth. Are there really two mines called Great Polgooth, or is one sailing under false colours; and if so, why? Was this mine formerly called Godolphin; if so, instead of being bounded on the east by the celebrated Great Polgooth Mine such boundary is four miles distant. The success which attended the partition of the Indian gold mines may entice shareholders to join questionable undertakings with a prospect of receiving 10s. per share back by selling part of the property to another company; but is this as it should be? If there were room for two companies, why not have brought each out on its own merits.—London, March 25.

ARGUS.

OLD TREBURGETT SILVER AND LEAD MINE (ST. TEATH, CORNWALL.)

SIR,—Many readers will be pleased to hear, I am sure, that this once celebrated old mine (for its riches) is about to be re-worked as the Treburgett Silver and Lead Mine, with a capital of 60,000£., in 60,000 shares 1£. each, full paid up. The prospectus, when ready, will of course be sent for publication in the Journal; and knowing the property is in the richest district for silver and lead ores in the kingdom I anticipate for the company a great success.

A WELL-WISHER TO LEGITIMATE MINING.

Wadebridge, Mar. 30.

MONTGOMERYSHIRE AND MID-WALES.

SIR,—I have not troubled you for some time past with any of my effusions. With your permission, however, I wish to call attention to some recent discoveries made in the above district, two or three of them of no mean importance, and it is certainly very cheering to find that new and rich discoveries are cropping up to view one after the other at home, just at a time when the attention of mining speculators is almost absorbed by foreign mines—mines that no one in forty of the proprietary can ever hope of visiting personally, while in Wales and Cornwall a few hours by rail lands them on to their property, where they can have the satisfaction of examining everything, and subjecting everything to a close personal inspection. Notwithstanding all these advantages, "Distance lends enchantment to the scene," as well as an itching desire to become suddenly wealthy—so much so that commonsense is sternly bid to stand aside while the votary of golden wealth revels in his visionary dreams of Indian, Nevada, Colorado and other gold and silver mines, from which he is to draw his mighty wealth; visions in most cases never to be realised. There is one class of gentlemen, however, that will reap a rich harvest in the course of a few years from the vast number of companies that have been floated of late to work foreign mines, as well as the so-called mining engineers at the head of the concern, and the liquidators; but it is an ill wind indeed that blows no good to anybody.

But, now, for what is of much greater importance—the fine new discoveries recently made in the above district; first at Dalrhiew, near Rhyader, a fine course of rich copper ore several feet wide has been cut into the adit level, while on the other side of the river a rich discovery of lead ore has been made at Nant-y-Cae; and in Montgomeryshire a very beautiful new discovery of lead ore has been lately made at surface at the Conroy Mines, while the new lode at Great Dyliffe is proving rich for lead, and the unusual rich discoveries of copper and lead ore at the Great Ashfort and at the Great Gias Mines, near Llanidloes, proves at once without any more that it is not India and abroad that mineral wealth alone is to be found, but at home, close unto us—nay, at our own doors—and only requires care in the selection and economy and skill in the development to vie with the very best Indian and foreign mines the few best that can possibly be selected out of the great shoal now afloat. Perhaps I may have something further to say about those new discoveries which I have just referred to in the course of a few weeks again.

Llanidloes, March 29.

CARACTACUS.

MINING IN ROCHE.

SIR,—Roche parish contains numerous mines, all of which have been very partially developed; but now that people have awakened to the importance of our mineral resources, and capital being so abundant as to seek an outflow, it is probable that better attention will be given to this industry. I find that a new mine, called Edgcombe Consols, near the village of Roche, is to be worked—in fact operations have been commenced—and the prospects of its becoming valuable as a tin mine are very good. Many years ago a poor man sunk a pit in what is now the Wesleyan Cemetery, and struck a rich tin lode, but the water was too much for him to contend with, so he gave up the pursuit. A few weeks ago, Mr. Marshall, residing in the village, obtained from the Earl of Mount Edgcombe a license to search for minerals over an extensive area, including that lode. By an expensive mode of operation he caused the water to be drained, and he found that the account given by the miners as to the poor man's discovery was correct; he found a good tin lode, and by opening on it in some other places eastward he found it of good quality and of great width. He has also, by prospecting, discovered two other parallel tin lodes of similar composition northward of the first. These discoveries have induced Mr. Marshall and Capt. D. Cook to form a company for developing the lodes upon a fair scale. The length of the sett on the course of the lodes is considerable, and additional land in that direction can be had, if desired, from the same landowner. This little mine is in ground that has not been tried except in a few places on the backs of the lodes. It is probable that the discovery so made will lead to the opening of other mines in the same district. Roche is a great china clay district, in proof of which I may state that within a radius of 1½ mile of Bugle (alias Carnmerry) 8500 tons of clay were sent to market, and 9000 tons of coal consumed within three months.

R. SYMONS.

Truro, March 30.

ILLOGAN MINING DISTRICT.

SIR,—On my arrival at Redruth this morning I was informed that the great flat lode of this district was cut in West Frances at the 152 fm. level, and found to be good. The influx of water prevented the miners from penetrating far into it, which they will soon do, as the water will be pumped out in a short time. There were some persons who expressed their confident conviction that the flat lode would never be found in that direction northward from the engine-shaft, although it was alleged to have been cut at the 132. This discovery must ensure an opposite conviction.

A very important fact in connection with this great flat lode is its richness in West Basset about 20 fms. east of West Frances boundary. Capt. Piper informed me that at the 140 the miners will raise 100 tons of black tin in about four weeks from one point alone. This discovery will enhance the value of shares in West Basset and West Frances materially, and the prices of shares in each mine have already risen several pounds per share.

The Wheal Basset Company are prosecuting their works in sinking and driving to cut the same lode, and it is supposed that they are near the lode in the engine shaft, and also in the 112. In West Frances the miners have been driving the 132 by the side of the lode, but have now cut into it and found it to be very rich. This as well as the discovery in the 152 cross-cut (the lode being entire for the whole length of the sett) must make this mine a very valuable property. The next mines in which the flat lode will be cut are Wheal Basset, and Basset and Buller Consols—mines which will be found to be of immense value when the discovery is made. Wheal Basset has already yielded 360,000£. profit, and Buller and Basset have yielded about 700,000£. profit under different companies—Wheal Buller, when worked by Messrs. Taylor and Co., 300,000£. (so I am told); 350,000£. under Messrs. Davey and Co.; and East Basset yielded 60,000£. profit. Buller and Basset Consols is an extensive

property, embracing as it does Wheal Buller, Copper Hill, and East Wheal Basset, and contains very numerous lodes of tin and copper. All the profit realised by Messrs. Taylor and Co. was from two lodes, that realised by Messrs. Davey and Co. was from one lode only, and that by East Wheal Basset from one lode, whereas the lodes in the sett unwrought are about half a score. The last Wheal Buller Company intended to put a cross-cut from the engine-shaft southward to intersect all the lodes in the sett in that direction, but which they never did. This is a work which should be undertaken and executed when the present company have pumped out the water, because there are at least three lodes which should be tried, one of which has not been tested at all below the back. As to the flat lode the depth at which this can be intersected in Basset and Buller Consols will be assumed when it has been cut in Wheal Basset. The fact of it underlying the whole of the sett must attach a great value to the property, which will be found to be the most valuable of all the mines in the district.—Truro, March 29.

R. SYMONS.

DEFUNCT MINES.

SIR,—Can any of your numerous readers inform me what has become of the Great Western Silver (California) Mine, Nevada, the Tuolumne Gold Mine, and an Australian one, Thornhill Reef. In these mines I hold certificates for over 500£. hard cash, and was induced to buy the shares in them through circulars sent me by people who study my welfare, and who now periodically send me, announcing a grand discovery and a fortune as they are millionaires, and want me to listen to their counsel how not to become one. Probably there are others who, like myself, may now invest in many such questionable mines through such agencies, and a few years hence will regret it. All I got in reply to my communications to the secretaries were the affairs were in liquidation. If that is the case, what becomes of the properties, and who should furnish a statement of them? If a Macdougall, of Emma Mine notoriety, were Chairman of such mines, the shareholders would be protected, and the mine found.

A VICTIM

KILLIFRETH MINE.

SIR,—I am pleased to see from the remarks in last week's Journal that there are others who, like myself, feel dissatisfied. Two calls have recently been made, and from the proceedings which have taken place at the mine there have been many shares forfeited, which must prove that confidence is shaken in the management, and that it is time the directors should adopt a line of policy which should, if success is to be attained, be acquiesced in by those who still hold on.

A SHAREHOLDER.

THE HALKYN DISTRICT MINES DRAINAGE COMPANY

SIR,—I shall feel obliged if some of the numerous readers of the Journal can give any information as to how the above named company are getting on with their work. One sees very little notice of such an important undertaking in the Journal. I should like to know whether the company are really at work. I hold lead shares in the district, and as things seem so quiet feel anxious as to whether the work is progressing and likely to un-water the mines it was started to do. I have seen no sales of lead from Rhosnesmor lately, and may remark that there are other mines waiting the Drainage Company's favour.

INTERESTED.

MINING INFORMATION IN NORTH WALES.

SIR,—I was much gratified to find in the Mining Journal the first of a series of articles in answer to my suggestions or questions asked of your North Wales Correspondent some weeks since. To me the notes in last Saturday's Journal are particularly interesting, and I feel sure your readers in the North Wales district will follow them with a considerable degree of interest. I hope from the writer and readers much good will result. The notes will at least enable anyone following them to enter any undertakings with an intelligence which would be lacking in many cases without them. I must thank your North Wales Correspondent for his commencement.

March 29.

LLANARMON.

LADY ANN AND THE LLANARMON DISTRICT.

SIR,—It is with much pleasure and satisfaction that I again revert to the encouraging prospects of this mine and the surrounding district of Llanarmon. I have before had occasion to point out the chief features of the property, and need only summarise them by explaining that it contains all the main lodes of the rich old Llanarmon or Westminster Mines, being four in number of the most masterly ones, besides others of a less important description, which run uninterruptedly through the grant in virgin ground for over 400 yards in length. On one only of these has any trial yet been made, and at the shallow depth of but 30 yards the Westminster lode has been opened upon by driving 8 fms. eastward, showing certain and unmistakable evidences of a near approach to a valuable deposit of lead ore. The hanging portion of the lode here is fully 18 in. wide, composed entirely of vein-matrix without rock, consisting of soft, friable, and the more compact crystalline spar, interspersed with rich gossan and other matter associated with the great courses of ore found in this district (with lead ore also freely scattered throughout). Looking at the result of the first work undertaken in discovering one of the main lodes at a distance of over 100 yards west from the boundary of the Westminster sett, with such appearances as described, and with such a comparatively superficial exploration, I have no doubt this will ere long prove a profitable and durable undertaking of no ordinary kind.

When I first had to report on this property I could point out only, in addition to the chief features of recommendation in the grant itself, the fact of rich courses of ore that had been formerly worked away in the adjoining old Westminster Mine, and also in the mine adjoining to the west, showing the veins to have been very productive on each side of the Lady Ann Mine; but I now find from recent operations undertaken that a valuable discovery of ore has been made at the Nant Adda day-level, adjoining to the west, and as I have myself inspected a course of ore to the east of the boundary yielding fully 1½ ton of ore to the fathom, I am enabled to say that these courses of ore can now be inspected, one on each extremity of the Lady Ann Mine boundary, showing beyond question what I have hitherto only been enabled to affirm from my own knowledge of their past history. When it is added that the ground in this mine is drained naturally for over 100 yards deep before steam-pumping power is required, I think I may safely predict a "good time coming" for those interested in the undertaking.

WILLIAM FRANCIS.

Northop, Flintshire, March 28.

BWLCH UNITED MINES.

SIR,—It is refreshing to read the letter in last week's Journal on this property and to be reminded of the great wealth extracted from it by former owners even from a comparatively shallow depth. Many times I have visited this property, returning each time more impressed with the conviction that parallel to the axis of those rolls or undulations of ground so peculiar to the mineralised zones of Cardiganshire, bodies of ore were waiting to reward the energetic worker. According to Thales, of Miletus, the most durable species of wealth is hope, and I am convinced my hopes for the welfare of of this mine will soon be realised. A few days ago I was somewhat surprised to find that costeneing had been resorted to on the adjoining mine with the object of cutting the Pwlyrhenaidd lode—fortunately for the Bwlch. This lode, rich in silver-lead, has been proved to be in their sett. This lode at surface is from 9 to 12 ft. wide, and has a mineralisation of 1½ to 2 tons per fathom. A shaft has been sunk for 72 fathoms, and large returns can be shortly made from this point with the existing machinery. The name—United Mines—is thus explained—Bwlch Mine proper and the Pwlyrhenaidd. Your correspondent, Captain A. Francis, speaks of the north lode standing entire east of Doran's shaft for 200 fathoms in virgin ground. His convictions, held so long, are also coming true, since, from a quite recent trial, it seems to be beyond doubt that the lode has at last been struck with every probability of rich ore, as the stuff indicates. This discovery cannot be over-estimated, and with the intersection of a branch lode—if not the lode itself—

by the cross-cut south at the 50 fathom, which will give another run on the south lode of 100 fathoms, I can but look for a bright future for the property.

London, March 29.

MONA MINES (LIMITED).

SIR,—Many of your readers may not be aware of the past productiveness of these magnificent mines. They have paid some 5,000,000*l.* in profits. They have proved far more profitable than any mine in the United Kingdom, and few foreign mines can compare with them. Until the year 1879 they have always been in private hands. A company was formed at the close of 1879 in 8000 shares (a small number) to carry on the working of these known rich mines, and the following are the results for the year, together with important information given by the managing director—Mr. T. Fanning Evans—as to present and future workings. They will give some small idea of the immense value of this property.

When the mines were taken over by the present company at the end of the year 1879 operations were conducted on a very limited scale. The quantity of ore raised for the year averaged very little over 70 tons per month; exploratory work was almost entirely suspended, and an extensive portion of the mine, which up to seven years ago returned monthly large quantities of ore, lay under water, owing to the absence of sufficient pumping power.

Since the formation of the company we have constantly had in view the bringing up of all arrears of work; a due and judicious extension of operations, and a proper development of the western portion of the sett. We have succeeded in draining the formerly submerged portion of the mine; we have prosecuted outwork operations with a success that exceeded our expectations; our raisings of ore have increased from 70 to 350 tons per month, and the present appearances of the various bargains and pitches may, with truth, be pronounced satisfactory and promising.

These results have only been obtained by a heavy outlay of money, and incessant care and attention on the part of the officials. We have put up a pumping engine, which is of a power sufficient to drain the mine to a depth of 100 fms. below the present bottom; we have sunk Sydney's shaft from the 48 to the 70, and are continuing its sinking, and in the course of the year have driven exploratory levels to the extent of no less than 240 fms.

Taking these circumstances into account the shareholders in the company have, in my opinion, every reason to be satisfied with the proved and potential value of their property. I have been connected with it now for 25 years, and I am more than ever convinced that it is a property which may be relied on for ages as a source of profit commensurate with the capital and outlay it requires. The returns may be calculated upon with certainty for an indefinite period, and where the profits, although perhaps never immense, may be reckoned on with certainty, a dividend of 10 per cent. in the first year may well be regarded as a gratifying earnest of future success. I would also draw attention to the fact that for several months after the formation of the company a proper system of bringing prominently before consumers the qualities of the surface products of the mine in the shape of ochres, oxide of iron, bog ochre, and colours had not been organised, and that this deficiency having now been rectified, a regular and increasing sale of these commodities may be confidently anticipated. It is also important that the extension made in our smelting establishment, and the cost it has entailed, should be considered in estimating the probable future value of the company's property.

At the beginning of the year 1880 we had only one furnace for smelting ore; we have now four ore furnaces, one calciner, and eleven kilns. These erections have cost a large amount, a considerable portion of which has been taken from the income of the year, but the outlay is one which will be amply repaid in the future by the advantages arising from treating our ores and precipitates on the spot. A calm consideration of the facts stated ought to convince all concerned that the mine possesses in it all the elements of a successful and profitable future.

During the year the raisings were:—Copper ore, 2239 tons; bluestone, 1612 tons. The quantity of precipitate produced during the year was 165 tons 14 cwt., containing 20 tons 9 cwt. 3 qrs. 23 lbs. of fine copper, and of a market value of 1132*l.* 15*s.* 3*d.* Our sales were as follows:—

Copper regulus	£7,834 1 4
Bluestone	2,702 14 2
Ochre	2,443 0 6
Pyrites	97 3 4
Copper ore	470 4 5
Solder	54 5 0
	£13,601 8 9

The returns of bluestone have lately fallen off, but the decrease has arisen solely from the working away of ground formerly laid open, and the dangerous nature of the rock in which the mineral occurs. The deeper and more extensive lateral operations we contemplate will in all probability prove the deposit to be of great magnitude. A cross-cut from Tiddy's shaft will not only penetrate this powerful lode at a great depth, but lay open also the ground under Old Tiddy's shaft and Golden Venture shaft, which in former years proved highly profitable to the 20 fms. level—the deepest point reached in this part of the mine. The precipitate shows a very small amount as compared with the results obtained in this department during former years. The quantity being dependent in a great degree upon the extent of the underground operations the decrease in the returns has inevitably followed the curtailment in the tribute and outwork during recent years. The present more extensive scale of underground operations, and the further explorations projected, cannot fail to restore this source of profit to its former importance. I have known it to produce from 70 to 80 tons of fine copper in the year. It need hardly be added that an increase in the quantity of precipitate produced will of necessity cause a corresponding increase in the quantity of the finer and more valuable class of ochres. Our present underground operations consist of six outwork bargains and 11 tribute pitches, employing altogether 105 miners. The outwork is directed almost entirely to the opening up of the lodes under the great opencasts near Sydney's shaft, but the unwatering of Cairn shaft will now enable us to turn our attention to the necessary development of that portion of the property. The tribute pitches look most promising, the quantity of ore being last month 331 tons, the largest return since the year 1871, when the water began to rise at Cairn shaft.

As regards our immediate prospects, a question of paramount importance to the shareholders, I would beg to submit the following estimate of the probable productive powers of the mine and the attendant costs:—

Sydney's shaft may be calculated on to produce per month	Tons 300
Cairn shaft will at once produce	100
Making per month	400
Value at the present price of copper	£ 750
The value of the bluestone per month will probably be	160
The precipitate according to present appearances will make p. month	140
The ochre will probably make per month	250

Total	£1300
The costs, after deducting the expenses on exploratory work and costs of new machinery and other payments chargeable to capital account, may be estimated at per month	650

Showing an apparent profit per month of	£ 650
Costs and returns per month:—	
Coal used for smelting, 400 tons, at (say) 12 <i>s.</i>	£ 240
Labour	80
Wear and tear, and sundry expenses, say	10

Per month	£ 330
Value of ore and precipitate as per estimate	870
Total	£1200
Value of regulus produced, 42 tons, at 30 <i>s.</i> per ton	£1260
Add surplus—say, 10 per cent.	126 = 1386

Profit per month

The whole concern thus showing an estimated profit of about 10,000*l.* a year. I wish it to be clearly understood that these estimates and remarks apply only to that small portion of the Mona Mine sett in which the present operations are conducted—Sydney shaft, a small portion of the Cairn shaft workings, and a portion of the bluestone workings. The eastern part of the mine has been lying idle for many years, owing to the absence of the necessary power and appliances for pumping. The richness of this portion of the sett has been placed beyond all doubt by the enormous quantities of ore extracted in former times in workings which extended from the very surface to a depth of little more than 20 fms. The proper exploration of this ground is a subject which now claims our attention, as we have almost completed the draining of the water, which has covered it for years. We shall then have at our disposal all the ore ground commanded by Beer shaft, Leman shaft, Marquis shaft, and Tiddy's shaft, a tract sufficient in itself to form an important mine. The judicious employment of a portion of our reserve capital will, undoubtedly, render this as important as the present seat of operations.

It is a pleasure to me to report that a recent examination of the surface far to the east of any work done in modern times has proved the existence at that point of a huge mass of gossan, which contains such a high percentage of iron that the Mostyn Coal and Iron Company, after making an analysis, have taken two cargoes on trial. The quantity must be enormous, judging from its thickness and apparent extent. If it turns out of economic value as an ore of iron, it cannot fail to be a source of profit; but its value in this respect is of far smaller importance than the indications it furnishes of a great deposit of ore identified in character and extent with those of the great opencast. This gossan is precisely the same as that which covered them; and, seeing that it lies in a direct line with them, and is flanked to the north by the same hard felspathic rock, one may conclude almost with certainty that it is simply a continuation trending eastward.

The levels going east come no nearer than Bluestone shaft, a distance of from 70 to 80 fathoms, while northward nothing has been done except in the Carreg-y-doll lode at Pearl shaft, where a rich lode was profitably worked to the 100, the greatest depth ever touched in Mona Mine. The discovery is, in my opinion, of vast importance.

I would also draw the attention of the proprietors to the fact that an extensive area, possessing indications of a most promising character, lies idle and entirely unwrought to the south and east of Mona Mine proper. It is, perhaps, well worthy of their considerations whether a new company should not be formed for the purpose of proving this ground.

I have to report that all the machinery at the mine and at the port is in an efficient condition. The various leases we hold remain intact. Our farm is in excellent condition, the fifth having been greatly improved by the application of large quantities of manure, natural and artificial, and by the draining of some portions. Our stock of horses consists of 13 powerful animals and two yearling colts. The increase in our returns of mining produce will render necessary the purchase of more horses. The paint mill is in full work every day, and judging by the present demand for washed ochre, we shall soon have to work it night and day. The value of the stock, when the mine and smelting works were taken over by the company, was 10,127*l.*, while a valuation made

on December 31, to every item of which I have given my personal attention, makes them 14,243*l.*

Taking a comprehensive view of the whole concern, and judging from my past knowledge of it and the present appearances, I have every faith in its proving a profitable and lasting mine. (Thus ends the managing directors' report.)

I find they have some 21 shafts on the mine which are about one mile square. The shafts in north part of mines are 14 in number. Henry's shaft, 10 fms. deep; Cairn's, 80 fms. deep; Sidney's, 55 fms. deep; Charlotte's, 55 fms. deep; Carreg-y-doll's, 30 fms. deep; Leman's, 80 fms. deep; Beer's, 20 fms. deep; Tiddy's, 30 fms. deep; Little Stephen's, 10 fms. deep; Marquis's, 30 fms. deep; Stephens', 10 adit level; Pearl's, 90 fms. deep; Carrigbladdia, 20 fms. deep; Treweek's, 80 fms. deep. From Cairn's shaft 300 and 400 tons of copper were raised monthly, and I am satisfied they will shortly raise 300 tons monthly again. Between two shafts (Cairn's and Marquis's) is a run of 230 fms. of ground, no doubt equally as rich.

I would here remark Marquis's shaft is rich 90 fms. deep, other shafts having same run of ore ground will no doubt prove as rich to the same depth and below it. The shafts in south part of mines are seven in number. Viceroy's shaft, 65 fms. deep; Blackrock's, 30 fms. deep; Calceiner's, 30 fms. deep; Old Bluestone, 30 fms. deep; Sanderson's, 30 fms. deep; Clay's, 30 fms. deep; Bluestone, 30 fms. deep. The same remarks will apply to these shafts in sinking below their present depths.

The North Discovery Lode: This lode stands whole in the Mona Mines; it gave 500,000*l.* profit in Parys, and in that mine is worked up to the Mona boundary. All these riches have yet to come in Mona, a most valuable and important point, excluding all others.

Further W. J. Henwood, F.R.S., F.G.S., in his work on metalliferous deposits, states that in Mona the enormous body of ore discovered near Anlwch, Anglesea, on March 2, 1868, lowered for some years the price of copper throughout Europe, and has been wrought without intermission until now. The great metalliferous deposit appears not only to have occupied the whole space between the Clay Shaft lode and the Black Rock lode for a considerable distance, but to have extended north of one and south of the other. It has been wrought open to the day for about 90 fms. on line of its strike, and more than 140 fms. in extreme width in the hill-side open cast, and 210 fms. on line of its strike, and more than 90 fms. in extreme width in the great open cast; to a depth of 15 fms., and for an area of 5500 acres in the former; to a depth of 23 fms., and for an area of 12,000 acres in the latter; and to a greater depth for short distances in both open casts.

Native copper, earthy black copper ore, vitreous copper, and purple ore have been obtained, the principal produce being copper pyrites. Great quantities were of course scattered through the earthy matrix. During three months in the year 1787 one party of workmen extracted 231 tons of copper ore. On one occasion 44,000 tons of ore lay ready for the furnace.

The North Discovery lode (in Parys Mountain) is worked to a depth of 112 fms. To a depth of 13 fms. in one part, and 23 fms. in another, the great metalliferous mass was quarried for its entire depth. From 1832 to 1862 the amount of copper ore calcined was 155,404 tons. From 1861 to 1867 they prepared for sale 17,333 tons of ochre. The Mona Mines require only to be visited to ascertain these facts.

I know of no mine so legitimate as an investment for capital. I might point out mines in 100,000 and 200,000 shares of 1*l.* each, and selling at 1*l.* and 2*l.* per share premium, not having sold an ounce of ore, and yet selling at a market value of 200,000*l.* to 400,000*l.*, while in Mona an investor has a known and well tried property, and yet immensely rich, paying dividends. There are only 8000 shares at 13*s.* each, equal to 94,000*l.* They will in course of next year sell 800 to 1000 tons of copper ore monthly from Sydney's and Cairn's shafts, excluding bluestone, ochre, &c. I have carefully watched this mine, and am satisfied as to its great value.

London, March 31.

WHEAL COATES UNITED TIN MINES.

SIR,—As a shareholder in this undertaking, I feel that the investing public have not given due attention to its great merits, although the mine has been inspected and reported upon most favourably by the most eminent tin mining authorities. If a reason can be given for this apparent neglect, it will, no doubt, proceed from the comparatively small capital of this company in contradistinction to others. This, however, speaks volumes in its favour to those who are seeking a sound tin investment—the present shareholders reaping the harvest of a former large expenditure. I may add that the present company has only been in full work a few months, but has still sold tinstuff equal to one-fourth of the capital of the undertaking. It appears, however, the direction is quickly opening out reserves of tin ground, and each additional month has been, and is, intrinsically adding to the value of the shares. SHAREHOLDER.

St. Agnes, Cornwall.

CARDIGANSHIRE MINES AND MINING, AND REDUCED ROYALTIES.

SIR,—Last week I touched on the Bwlch United Mines, and my belief that the cross-cut at the 40 had not been extended far enough north to intersect the main or Goginan lode, and this opinion would seem to be confirmed by last week's report from the agent, Capt. W. Northey, who says (March 24) "I have put two men to bore a hole in the cross-cut north at the 40. They are in 7 ft., and have met with two small veins of quartz, carrying fine lead." I need not say that this is a most important matter, and the opening out of the cross-cut into this quartz and ore will be looked forward to by the shareholders and others interested with much anxiety. The Goginan Mine has been sold, and the new party, it is rumoured on good authority, will take possession within a week from this date. I hear that ample capital is provided to give it a proper and effectual trial, and there is but one opinion expressed in this district, and that is that it will become a richer and better mine than it has ever been. I entirely concur in this opinion, and the reduction of the royalty to 1-20th, instead of 1-10th, as it was first worked, will give the shareholders the necessary stimulus for carrying forward the proposed trials energetically and quickly.

The New West Goginan has been purchased with all its valuable machinery, consisting of water-wheels for pumping, drawing, crushing, and dressing apparatus, in first-rate condition, all of them being nearly new, and capable of returning 150 tons of ore per month, together with offices, smiths' and carpenters' shops, ore house, material house, powder magazine, stabling, &c., and a new lease for 21 years, at a reduced royalty of 1-20th, obtained. The first trial to be made is the cutting of the old Goginan main lode at a depth of 30 fms. from surface, and should this prove a success there is no doubt these shares would have a rise equal to the Goginan shares when that mine was opened out, which went from 5*l.* to 42*l.* per share in 12 months. The Cwm Erin lode passes through this grant also for nearly a mile in length, and forms a junction with the Goginan lode in the western part of the sett, and if at and near this junction great bodies of ore should not exist it would be contrary to all that has yet resulted from junctions of lodes under similar circumstances in this county. This is a trial which for a small outlay may open out the richest mine ever worked in Cardiganshire.

The Silver Stream Mine, which lies between Goginan and Cwm Brynno, has recently been started with ample capital to give it a trial, and from the shallow trials that have been made should prove rich in depth. Cwm Erin also is receiving attention, and there is every probability it will be started within two months from this. This mine when last worked in a few years returned 173,000*l.* worth of lead ore, and gave a profit of nearly 40,000*l.* I hear also that Mr. John Benjamin has found a party for the late Rhedol Mines. If the grant could be secured on the same terms as Goginan and New West Goginan as to royalty, it would be a great encouragement to the company. I have all the working plans and sections of these mines, and should anyone connected wish to look at them for their future guidance I should have much pleasure in showing them, as they might prove of much advantage in carrying on future operations.

It is gratifying to add that Froncoch, the largest and deepest mine in the county, has also been granted by Lord Lisburne at 1-20th instead of 1-10th royalty, and that this liberality has had a wonderful effect. I may fearlessly assert that more trial ground has been opened out during the past two years than was opened out during the ten years previous to it, besides enabling the company to make good and regular dividends. Cwm Pryf sampled from over the adit level last week 15 tons of good ore, and with a small capital to drain the mine under the adit must prove to be both lasting and rich. There is every reason for supposing this district, which like many others throughout the county has for a long time been very dull and miserable, will shortly see such a revival of mines and mining as will more than equal its most prosperous and palmy days.

Goginan, Aberystwyth, March 30. ABRAHAM FRANCIS

[For remainder of Original Correspondence see this day's Journal.]

EAGLE INSURANCE COMPANY.—The report of the directors for the year ended with Dec. 31 states that the gross sum assured was 423,633*l.* Including bonuses, the claims on the decease of lives assured amounted to 285,125*l.*, and those for sums falling due on the

attainment of a given age to 14,197*l.*, making together 299,322*l.* against 334,131*l.* in the previous year. The rate of interest realised on the assets was 4*l.* 8*s.* 6*d.* per cent., and the expenses of management, exclusive of commission and medical fees, 16,799*l.* The total income was 367,763*l.*, and the disbursements 359,350*l.* The assets at the close of the year, including the paid-up capital, being 3,051,954*l.* against 3,043,542*l.*

REPORT FROM CORNWALL.

March 31.—The advance in the standards, which was announced on the day succeeding our last report, though only replacing matters where they had been for a few weeks, has had a very decided effect in hardening the share market. There is no falling back in the anticipations which have now so long been entertained of substantially higher prices at no very distant period, and it has been well pointed out that this feeling of quiet confidence in the future is the most remarkable feature that distinguishes the conduct of mining affairs and the attitude of mining men now the period of wild excitement and eager wishings to buy and sell attending on the chiefly speculative period through which we have passed. Though prices may not be substantially higher than they were, and though hope of the fuller improvement may still be deferred, yet the change in tone and feeling of security and stability which has come upon us is none the less certain—the most marked indications we can have of an approaching permanent improvement.

Concerning individual mines there is not much to note beyond the fact that Mellanar continues to do well, having raised in the past year not only a larger quantity of ore, but having obtained a better average price for it. This most gratifying and successful resuscitation should afford a gleam of hope for our copper mines, which assuredly stand in no little need of something to cheer. North Busy is likely to have a lively special meeting next week. The state of the finances revealed at the last account was anything but a pleasant surprise to the bulk of the adventurers. At the next Carn Brea account something special in the other way has been freely anticipated; and there is no doubt the mine is opening out in a very remarkable way. Cook's Kitchen appears at last to be fairly turning the corner. Why it should have held back so long is one of those mysteries which only mining enterprise seems able to supply, but of which mining certainly has little lack. If the result now anticipated follows it will be a triumph of pluck and perseverance.

There are still a few new ventures, some of which seem of a very promising character, and we hear of the issue of new mining maps as being rendered necessary by the revival of mining in long neglected districts in Cornwall and Devon. East Wheal Rose has the first place just now in public thought and esteem, and Old Shepherds, adjoining, is considered likely to do exceedingly well. If all accounts are true there must be an enormous amount of ore reserves in these mines which may be attacked almost immediately they are forked.

One of the mining princes of the West, in birth and residence, has passed away by the sudden death at Plymouth of Mr. Francis Barrat, formerly of St. Austell, whose father will be remembered by mining men of the past generation as largely interested in mineral ventures in Cornwall. Mr. Francis Barrat, however, was chiefly connected in his business relations with the North of England, having a very large interest in the iron mines of the Barrow district. Popular report placed his income at 25,000*l.* a year, and it undoubtedly was very large.

By the unexpected death of Sir Charles Reed Cornwall has lost a very influential and active representative in Parliament, and St. Ives is plunged into a contested election. It seems a pity that in so important a mineral district, though at present in that particular under a cloud, it should seem impossible to obtain a candidate more closely identified with the mining interests, and that so large a body of the electors should be credited with being swayed in their preferences by leaning to "church" or "chapel." Here we have nothing to do with politics as such, and all things considered, it is, perhaps, as satisfactory an issue as can be now expected that the battle should be fought out between two gentlemen so strongly interested in the county as Mr. Ross and Mr. Pendarves, both though in a different way interested in the progress of West Cornwall and in mining enterprise. So far as the western division of the county is concerned we may mention that the rumour is again current that Capt. Teague is likely to offer himself at the next vacancy in the Conservative interest. More unlikely things have happened.

The Redruth Mining Exchange has thoroughly justified the expectations of its promoters alike in its utility and its financial success. At the annual meeting just held not only was a dividend of 10 per cent. declared, but a credit balance of nearly equal amount carried over, making a total profit in fact of something like 20 per cent. This, however, after all is only a small matter compared to the convenience of the Exchange to all interested in the transaction of mining business. The wonder seems rather to be how it could have been done without so long.

The first report of Capt. Prisk as Consulting Agent to Phoenix and West Phoenix United Mines is a most important testimony to the value of this fine property; all that is needed for the rapid and prosperous development of which is clearly, as Capt. Prisk sets forth, the introduction of boring machinery, now in hand. In his reference to the workings connected with the old sump shaft, where various points are in operation worth from 6*l.* to 30*l.* a fathom, Capt. Prisk states—"This portion of your property, which is all in new ground to the surface, is now opening up very valuable and is most important. From the present work and characteristics of the lode I consider the unwrought tin ground existing between this and your western workings is worth hundreds of thousands of pounds sterling." The western mine, where the value of points runs up to 50*l.* per fathom, is considered likely to prove a valuable and profitable mine in itself. Operations have been commenced here for the purpose of cutting the valuable lode recently cut by the New West Phoenix, and running continuously through Phoenix United property. A great deal of interest attaches to the Phoenix mines from their position as the pioneer tin mines of East Cornwall, and now that the temporary causes which led to a falling off in the returns have ceased to operate, it is very gratifying to find Capt. Prisk summing up in the conclusion, that the mines, with their extensive and costly plant and improved prospects, are "a very valuable property, and calculated shortly to take a much higher stand in the mining world." What with lead and tin the Liskeard district is clearly looking up again.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

March 31.—The demand for furnace and gorge coal is getting less since the production at the mills and forges and at the furnaces is being curtailed. But the domestic coal trade keeps up better than had been anticipated, and in part atones for the falling off in the manufacturing coals. Prices of these latter are rather easier. The Earl of Dudley has to-day (Thursday) officially reduced coal 1*s.* and slack 6*d.* per ton. In Birmingham this afternoon, sales of pigs in lots of 200 tons were made known, and in one case there was a transaction in pigs made outside this district to the extent of 2000 tons. Nothing, however, could be done in those pigs for which vendors demand full market rates. In the finished iron trade there was considerable discussion touching the low prices which are now being accepted by some firms for common bars. Rates as low as from 5*l.* 12*s.* 6*d.* to 5*l.* 10*s.* for such iron prevailed. But bars of such houses as William Barrows and Sons and the Earl of Dudley were firm at, for the former 7*l.* 10*s.*, and for the latter 8*l.* 2*s.* 6*d.* Agents of United States firms were seeking to buy strip iron, but at prices which yield no profit to makers. It was reported this afternoon that the failure of Mr. Rose, ironmaster, of the Albert and Victoria Works, Moxley, with liabilities 40,000*l.*, was likely to be settled by 18*s.* in the 1*l.* being found for the creditors.

At a meeting of the South Staffordshire Mill and Forge Wages Board, held in Birmingham on Tuesday, the Mayor (Alderman Chamberlain) presiding, Mr. Smith, the accountant, explained to the board the manner in which he obtained the average prices. The representatives of the operatives then complained that they were receiving 6*d.* per ton in extras less than the men in the North of

England, and they applied to be placed on an equality with the men in the North. The employers denied that the men in South Staffordshire were receiving less than the men in the north, and urged that any extras that were received in the north at the present time were more than counterbalanced by the extras received in South Staffordshire. The President intimated that if it was found necessary he would visit the north to ascertain the customs with regard to extras there before he gave his award.

The South Staffordshire Mill and Forge Managers' Association at their last annual meeting elected Mr. Joseph Morris president for the ensuing year. In returning thanks, Mr. Morris spoke in favour of a revised and liberal rate of tariff by the railway companies in order to put South Staffordshire on more equal terms with places nearer the seaports. He said also that associations like the South Staffordshire one should aim at the greatest excellence in their products, for other countries were progressing equally fast with the old country, and better trade would bring a host of the keenest competitors. If America would forego its shallow policy, or if China could be opened up, there might be good trade for many years to come.

LIQUIDATING COMPANIES AND WAGES.—At the Walsall County Court the judge (Mr. W. D. Griffith) gave an important decision on a point under the Judicature Act—as for the right of the workmen of an insolvent company to be paid in full the wages due at the time of the suspension of the employing company. After a careful review of the cases bearing on the point, his Honour decided the question in the negative, but granted leave to appeal. The case before the Court was a test action against the Mr. E. Carter, Birmingham, liquidator of the Leighs Wood Colliery Company, Aldridge, and it was stated that between 400 and 500 other claims depended on this issue.

THE MELBOURNE EXHIBITION.—The first order of merit has been awarded to Messrs. Lowe, Sleigh, Bevan, and Co., Clarence Works, Birmingham, for a collective exhibit of carriage lamps, handles, and coach and saddlers' ironmongery.—Messrs. John Rabone and Sons, of the Hockley Abbey Works in this town, have been awarded a first-class award for superiority of workmanship and finish, combined with lowness of price, for the articles of their exhibit—boxwood, ivory, and brass rules, engine-divided steel rules, spirit-levels, and measuring tapes of linen, metallic wire and patent steel band measuring chains.—Mr. S. A. Daniell, of Edward-street, Parade, has received a first-class award for his exhibit of screwing tackle, engineers' tools, and copying presses.

TRADE OF THE TYNE AND WEAR.

March 30.—The weather has again been stormy on the North Sea, and the movements of shipping have been to some extent retarded. Steamers are, however, loading for the lower ports of the Baltic; the shipments of coals and coke have also been well sustained at Tyne Dock. A very satisfactory business has been done in the export of gas coals to the Italian ports. An improved business is also doing with Constantinople, Odessa, and some of the Mediterranean ports. The steam collieries are, we regret to say, doing badly; at most of the works near Blyth there is much depression, and there is no prospect of much revival in this trade until the Baltic is fairly opened. It is, however, now expected that the long delayed improvements in Blyth Harbour and the approaches to it are really to be effected, and a commencement will be made with the works very shortly. The demand for house coals continues moderate; there is an ample supply of this coal in the Thames, and at most of the coasting markets. There has been a better shipping business from Seaham; small ships are loading there, and they have been in request. The coke trade is steady, and most of the coking coal works and gas coal works in Durham are fairly employed. Messrs. Chapman and Co. have bought the Thrislington Colliery from the liquidators of the Rosedale and Ferryhill Iron Company, and they are about to repair all the coke ovens to the number of 106, and also erect new apparatus for washing the coal used for coke making purposes. There is a good demand for manufacturing and small coals, and also for Bunker coals, and the prices of these kinds of coals are well upheld.

The improvements to be effected at Blyth, we may observe, are very important; the Harbour Company are to deepen the river by 15 ft., so as to admit vessels of a larger class than now frequent the port. New coal staiths are to be erected by the railway company in the south side of the river; the latter company also to provide a direct line of railway to the port from all collieries north of the Wansbeck. When those important improvements are completed steam coals of first quality will be shipped at 1s. 6d. per ton less than can now be done in the Tyne from the works north of the Wansbeck, and all will be done that is possible to enable the colliery owners in that district to compete with steam coal producers in Wales and other districts.

The iron trade has not changed much during the past week; the make is great, and so long as the still further increase of stocks is looked for buyers will not take more than their immediate necessities require. It is also expected that warrants holders will begin to sell, so that at the present moment a weaker state of the trade can hardly be conceived. Some makers have been selling at an advance of 6d. per ton on present quotations for forward delivery up to the end of June. The shipments of pig-iron have been good this month so far; it is expected they will reach about 75,000 tons by the end of the month. The enquiries for ship-plates is improving, and there is no doubt that this trade will be the backbone of the finished iron trade, as it was last year. Bar iron is quiet, and prices are at about 5l. 5s.; angles, 5l. 7s. 6d.; boiler plates, 7l. 7s. 6d. The rates for pig-iron are slightly stiffer; No. 3, 38s.; warrants, 39s. 3d. net. At Messrs. Bolckow and Vaughan's a new converter is being blown in, and a new mill being started. Messrs. Connall's stocks of warrants are 158,000 tons, an increase of nearly 2000 tons on the week. At Middlesbrough, on Tuesday, a more cheerful feeling prevailed, and a better tone pervaded the market. The rate of iron was stiffer—38s. 3d. for No. 3. Makers asked a little more. The quotation for warrants was 39s. 3d. to 39s. 6d. No. 3. Messrs. Connall's stocks of warrants was 159,666 tons. The shipments of pig-iron last week were large—21,821 tons. The quantity shipped during March is expected to reach 80,000 tons. There is a fair demand for Scotland and Wales, and more iron is also going to the Continent. There are now better hopes of the spring trade. The manufactured iron trade is rather quiet; last week shipments of iron and steel were 3606 tons. Messrs. Bolckow and Vaughan's Steelworks have had fresh additions made to them, and are now producing steel on an enormous scale. Manufactured iron prices are—ship-plates, 6l. 2s. 6d. to 6l. 5s.; bars, 5l. 5l.; angles, 5l. 7s. 6d. Household and manufacturing coal quiet; steam and gas in good demand. Coke quiet at late rates.

The scheme for making a railway through the centre of Northumberland still attracts much attention, and certainly receives very substantial support. The subject is now under the consideration of the directors of the North-Eastern Railway Company, but that company can hardly be expected to construct such a line for the benefit of the farmers and landowners unless it can be shown that it would also prove to be profitable to the shareholders; and some doubts have been expressed on this point.

STOCKS OF PIG-IRON.—The report of the British Iron Trade Association gives the amounts of the stocks of pig-iron in the hands of makers and in warrant stores for the whole of the country at the end of the past year, the first statement of the kind which has appeared. From this we learn that the total stocks were 1,541,411 tons. Of this 739,000 tons were held in Scotland, and 331,124 tons in Cleveland. The largest stock beyond this was 85,000 tons in the Furness district. The smallness of the stocks, except in Scotland and Cleveland, will surprise many. On the estimate of the report it appears the total stocks held were only to the amount of ten weeks' consumption.

INSTITUTION OF MECHANICAL ENGINEERS.—The annual conference of the members is to be held in Newcastle on Aug. 2 and the three following days. A meeting was held in the Wood Memorial Hall, Newcastle, on Tuesday last week, Sir W. Armstrong in the chair, and a large number of the local engineers attended.—Mr. Westmacott, Mr. Haswell, Mr. Brown, Mr. Marshall, Mr. Newhall, Mr. Wardle, Mr. Bunning, secretary of the Mining Institute, and many others. Mr. Percy Westmacott, as Chairman of the executive com-

mittee which had been appointed at a previous general meeting to arrange the details, then explained the programme:—On Tuesday, Aug. 2, the President and Council of the Institution will be received in the lecture room of the Literary and Philosophical Society by the Chairman of the local committee, and also, it is hoped, by the Mayor and other influential persons, and after the preliminary proceedings the reading of papers will be proceeded with. The local committee propose to entertain their visitors on that day at luncheon in the Assembly Rooms, and in the afternoon the works of Sir Wm. Armstrong, Messrs. Spence and Sons, Newburn, and the Swing Bridge will be visited. In the evening Sir Wm. Armstrong will entertain the visitors to a banquet at Jesmond Dene. On Thursday, Aug. 3, papers will be read, and in the afternoon the shipbuilding yards at Jarrow will be visited. It is proposed to return to Newcastle by way of Coble Dean Dock and the pier works. On Thursday there will be excursions to Sunderland to shipbuilding works and the chemical works on the Tyne and to a colliery. In the evening there will be a conversation in Newcastle. On Friday, Aug. 5, the leadworks of Messrs. Bewick and Co. will be visited at Haydon Bridge, and it is hoped also that the celebrated works of Messrs. Bolckow and Vaughan will also be visited. Several local papers of interest have been promised.—Mr. F. Marshall, "The Tyne in connection with Engineering;" Mr. L. L. Bell, "Steel Plant at the Erimus Works;" Mr. Copeland, "Lead Manufacture."

Swan's Electric Light is to be put down at Mr. John Watson's colliery at Carnach, Motherwell, Scotland; it will extend to the pit bottom, the roadways, the station where the underground engine is placed, and possibly ultimately into the miners' working places. Of course, this must at present be looked on as an experiment, but there is no doubt whatever that the light will prove to be a very great acquisition at surface and underground in the main roads in the first instance, and there is also little doubt that ultimately it will prove quite as useful and successful in the internal workings.

PRESENTATION TO A COLLIERY ENGINEER.—On Friday evening over 60 of the officials, mechanics, and workmen of the Silkworth Colliery, near Sunderland, belonging to the Marquis of Londonderry, met at the Colliery Inn, for the purpose of presenting Mr. G. W. Ross, engineer, with a testimonial on the occasion of his leaving, he having received the appointment of engineer at the Ryhope Colliery, vacant by the death of the late Mr. Gibson. Mr. Ross has been about eight years at the Silkworth Colliery, and during that time he has superintended the erection of the massive winding and other engines at surface and underground there, and also all the erections at this new model English colliery. Two large winding-engines are now at work there, which are capable of raising 3000 tons of coal per day, from a depth of 300 fms. Those engines and erections include all the modern improvements, including improved expansion gear, scroll-drums, &c. The Ryhope Colliery is older and more developed than the Silkworth Colliery, upwards of 3000 tons of coals are raised per day from a great depth, and some of the coals are we believe worked under the bed of the sea. On this occasion the chair was taken by Mr. F. S. Stanton, the manager of Silkworth Colliery, supported by the Rev. T. J. Brown, the vicar of the parish, and Mr. Robson, under-viewer. After the usual loyal toasts had been given Mr. Stanton, in a feeling speech, handed over in the name of the subscribers the following articles:—A handsome marble timepiece with ornaments, a barometer, and tea and coffee service, for Mr. Ross; also a silver necklace for Mrs. Ross, and a pair of gold eye-glasses for Mrs. Wesenrafft. After Mr. Ross had feelingly replied on behalf of the ladies and himself, the remainder of the evening was spent in a most harmonious manner.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

I will begin this week's report by resuming my description of the lead mining districts of Flintshire and Denbighshire. The east and west lodes have a general dip towards the south. For the most part they are not far from vertical, but the amount of inclination is varied somewhat as they pass through beds of shale or marl. Branching out from these main lodes there are numerous flyers, branch lodes, and subsidiary cracks, which occur chiefly on the hanging side of the main lode. These sometimes die out and are lost; sometimes they meet with other cracks starting from a distant part of the lode, and sometimes after running for some distance parallel to the lode turn into it again. Besides the lodes thus described there are what are known as flats; these are of different kinds. There are those which occur in the solid rock at the junction of two dissimilar formations. There are two of these. The lowest occurs at the base of the grits and sandstones that overlie the dark uppermost beds of limestone; the highest in beds of cherty rock a little higher up. In these cases the parting between the beds has been widened by the action of water, leaving cavities to be filled subsequently as we shall see with other materials. These flats are usually, I think I may say invariably, connected with cracks that come down into them from higher strata. There are also flats occurring in marl beds at the points lying between a crack coming down from above and where it passes downwards some distance on one side or the other, where the resistance has been weakest, into the underlying strata. There is still further the remarkable, and perhaps I may say the antique, flat at North Hendre Mine in the lower part of the middle limestone, where the underlying beds seem to have sunk and to have left an undulating crack like that often seen over a weakly built arch of brickwork.

Besides the fissures and cavities already described there are others known as pockets, vughs, or cavities. In the quarries along the belt of limestone the explorer may see irregularly shaped masses of rock different from the rest of the beds. They are marked by a comparative absence of lime and a preponderance of sand in their composition. They occur in all stages of decomposition, and are mostly of a brownish colour, from the presence of iron. In places this loose sandstone is full of cavities, in others it is partly washed away especially under cracks which come down upon it from above, thus forming caverns in incipient stages of their growth. Where water has had free ingress and egress into and out of these deposits the result is a cavern. Where at some period the egress has been closed the result is a pocket more or less filled with clay, carbonate of lime, and brecciated fragments of limestone, in which, as we shall see, metallic ores may be found. It is to the earthy and metallic contents of the lodes, cracks, flats, and pockets thus described that I must next direct attention.

Prices in the coal trade are weaker, and it is with difficulty that a retention of 1s. out of the 2s. per ton advance made some time since is kept up. Merchants along the Holyhead Railway have still old contracts running, at 5s. 9d. per ton for house coals. At Birkenhead last week the sidings were full of coal wagons waiting to be unloaded.

Among the slate quarries going into liquidation I am sorry to see the Cleddau Valley, in South Wales. I had hoped something different, and trust the change is only the prelude to something better. What the quarries in that valley, Cleddau, Whitland Abbey, and three or four more want is a tramway to the Maenclochog line, some three or four miles in length. It is reported that good orders from London have been received for slates at the Pencelly Slate Quarry, recently opened in the same district.

A frightful accident occurred last Wednesday at the Minera Mines by which three men who were conducting a trial of new boring machines and explosive, with the permission, but not as I understand under the control, of the directors, were blown to fragments, and none left to tell the sad story of how the accident happened. The last few weeks have unfortunately been rife with accidents at quarries, collieries, and mines within this district.

I referred some months back to a projected mining trial in the limestone strata of Hope Mountain, some 2½ miles north-east of Minera. The preliminaries for this are now I understand arranged, and the work will be commenced directly by the Hope Mountain Silver Lead Mining Company. It is a very important trial, and possessing similar conditions and strata to other important mines, it ought to be successful. It is rumoured that the Midland Railway Company have bought the Central Wales and the Carmarthen Junction Railway. The question arises what will they do with them. We must wait and see.

We shall soon see what the Quarrymen's Union of Wales can do in the management of a slate quarry. Possibly the result of this trial

will be that the men will have more sympathy with the masters in the difficulties they have to contend with. I am glad to hear that work is to be resumed at the New Prince of Wales Quarry, with the view of proving a lower slate vein which is found in good condition at Glan-y-rafon Quarry, a mile or two to the north-east.

REPORT FROM DERBYSHIRE AND YORKSHIRE

March 31.—There has been very little change in the state of the coal and iron trades during the past week, but with regard to the former there is no doubt that the demand for house coal must inevitably decline with the approach of fine weather. So far, however, house coal has maintained its price, low as it is, Silkworth's being quoted at the pits from 8s. to 8s. 6d. per ton, the Barnsley "sofis" seem 6s. 6d. to 7s. 6d., and steam and "hards" about 6s. per ton. These prices may be taken as those prevailing in both North Derbyshire and South Yorkshire, seeing that both are in the same field. In Derbyshire the trade with London has been well kept up, more especially from Clay Cross, Eckington, Grassmoor, Blackwell, and Boythorpe. Unfortunately, however, the dear coal does not go off so well, and the prices are exceptionally low, and unremunerative for sellers per ton. It is needless to state that the only recipients of profits are the miners themselves, for owners have been losing heavily of late. Reports from the North of Europe to some of our colliery owners are more favourable than in former years, and we are promised an early shipping trade to the Baltic from the Humber ports.

In Sheffield, business in the heavier branches of trade have become more active, and this has been especially the case with respect to composite plates for our armour-clad vessels. While I myself was about the first to advocate in the columns of the Journal, when all the special papers laughed at the idea of steel superseding iron; it is, however, rather gratifying to find that these ideas of mine, propounded ten years ago in the Journal, have now been fully verified, and that steel has now superseded malleable iron for many purposes for which the latter was supposed to be the only material that could be adopted for structural and other work. In Sheffield there is considerable activity with respect to rails and railway material, but a movement is now on foot to obtain from the Midland and other railway companies a lower rate to the Humber ports as well as to Liverpool. If the companies do not concede a reduction it will make a most material difference to the makers of Bessemer rails in Sheffield, who have now to pay nearly 1½d. per ton per mile for the carriage of rails to either Hull, Grimsby, or Liverpool. During the week there has been no change in the state of the coal trade, but there is a strong evidence in favour of the belief that household qualities are becoming in less request. Steam coal has gone off better of late, and the prospects are just now more encouraging.

THE ST. AUSTELL DISTRICT—GREAT POLGOOTH.

The Great Polgooth United Tin Mines Company, which was announced last week as having been formed to work the celebrated Great Polgooth with Tregontrees and Mulvra mining grants, has now issued its prospectus. The capital is fixed at 100,000l., in shares of 1l. each, and the purchase money at 63,000l., in shares or cash, at the option of the company, leaving 37,000l. for working capital. It will be seen from the prospectus that one portion of the grant to be acquired, and famous for centuries as the Great Polgooth Mine, has already made returns of tin which are estimated at 6,000,000l. The great wealth of this property and the mines surrounding it has been so repeatedly and exhaustively referred to that, forming as they do the nuclei from whence the whole mineral wealth of the district diverges, it is needless to recapitulate the enormous profits yielded by adjoining mines. Only three lodes have been worked, and 120 fathoms is the greatest depth attained, so that the figures are the more surprising. It is explained that the reason these workings were discontinued was in consequence of the great depression in the price of tin, caused by foreign supplies. At the time referred to black tin was selling at 32l. per ton. The present price of black tin is about 60l. per ton. Black tin has been sold at above 100l. per ton, and from the exhaustion of foreign supplies is expected to again reach that figure very shortly. Within the last 20 years about 60,000l. worth of black tin has been sold, mostly gained from stopping the back of the adit and the dressing over halvans (waste heaps) on the surface of the Great Polgooth Mine—see Capt. Hancock's report—which operations are now being continued, the miners working at a tribute of 12s. in 1l. There are countless tons of halvans lying on the surface, from which returns of tin can be made as soon as the stamps are erected. Capt. S. Mitchell estimates that these halvans contain thousands of tons of tin, worth at present price 60l. per ton.

The geological surroundings and formations are described as identical with those which have yielded millions of pounds worth of tin in the same property, and the backs of all the numerous virgin lodes existing having been proved leaves no doubt that all will prove equally rich. The Tregontrees, which is regarded as a highly important mineral property, adjoins Great Polgooth to the north-west, and is to be developed with it, and it is observed that the geological position of Tregontrees is all that can be desired for the profitable production of tin, it being, in fact, a continuation of the same enormously rich lodes and tin-bearing clay-slate formation as the famous Polgooth. It is the conviction of those qualified to judge that, with equal development, the Tregontrees portion of the company's mines will equal the riches of the Great Polgooth, and also return millions of pounds worth of metal. This part of the property is within a mile south of St. Austell, with regard to which Mr. R. Symons writes:—"The returns from the mines in the St. Austell district were about 20 millions sterling. Of that amount Great Polgooth, the largest, most ancient, and most productive of all the mines, yielded about six millions, and being comparatively shallow similar results may be anticipated by a further prosecution."

The most favourable opinions of the several mining captains who have visited the property are more than confirmed by Mr. George Henwood, whose name is well known to the readers of the Journal. In his report he says that he regards the Great Polgooth as the most striking instance of the almost fabulous wealth produced by Cornish tin mines, and also the best example of the immense wealth still remaining unwrought. The stanniferous production by this mine from time immemorial has, he continues, caused it to be quoted as a reference. Although history fails to account for the origin of the tin streams in close proximity—I allude to Pentewan—which has yielded enormous quantities of tin, there can be no doubt that the mineral was derived from the backs of the lodes of Great Polgooth and adjacent mines by the ordinary denudation of nature. The Great Polgooth Hill is a remarkable horizontal tin deposit; therefore the produce can be made available at a comparatively trifling expense, not requiring machinery for pumping or an outlay for sinking shafts, but merely driving levels and laying down tramways to convey the tin to the reduction works. The tin from the Great Polgooth has always commanded the highest quotations in the market, having the peculiarity of making grane or dyerous tin without refining; indeed the Great Polgooth tin ranks as the finest known. I find that you have the right of water from two streams—a matter of paramount importance for dressing purposes. The quantity of tin ore available is so great as to be really incalculable, and I believe by the erection of powerful batteries of steam stamps, and the utilising the latest inventions and modern appliances, you will have no difficulty in making such returns as will yield 100 per cent. on your capital.

Amongst the mine agents who have been inspected and reported are Capt. R. Hancock, William Richards, and S. Mitchell, and it is difficult to determine which is the most enthusiastic of the three. Capt. Mitchell says that "a most remarkable and valuable feature in reference to Great Polgooth Mine, and one that cannot fail to immediately impress anyone going over the property, is the immense quantity of tin now at surface contained in the halvans or burrows left from ancient workings before the days of improved stamping machinery. Properly treated, I feel certain that thousands of tons of tin will be yielded, worth at present prices about 60l. per ton. From the great value of the extensive halvans, and the vast capabilities of the various tin-producing lodes (doubtless containing millions of pounds worth of ore), I consider that the profits will be altogether

extraordinary." Capt. Hancock remarks that "there is more value in Great Polgoth than has ever been taken out, and the addition of the important new ground of Tregontree will enable it to be mined in a quick and cheap manner. I should recommend the continuance of the new adit level through the hill, which will not only intersect all the known lodes but will, I feel confident, lay open many other valuable lodes as yet undiscovered. The end is now some 60 fms., the drainage being very easy. A cross cut south from this level has already opened on two counter tin-bearing lodes. The continuation of this new adit level will command the lodes at a depth of 35 fms. below surface. Cross-cuts can be extended from this adit both north and south, and the lodes thereby opened up and tin ground discovered." And Capt. Richards concludes an interesting report with the observation that he must say that as the St. Austell district in the past has proved to be the most metalliferous by the richness of Great Polgoth lodes, so its reputation will be maintained in the future by the great returns that must result from further development. The prospectus, which will be found in another column, will well repay perusal.

PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARE MARKET.—Mr. S. J. DAVEY, mine shareholder, Redruth (March 31), writes:—Our market has been quiet during the week with less business doing. South Frances advanced 3, and Cook's Kitchen 4. West Frances advanced to 151 from 147, directly it became known that the flat lode had been cut in the 150, but prices afterwards declined to 131. Carn Brea has fallen 6. To-day business is checked by the setting. The following are the closing prices:—Blue Hills, 3½ to 3¾; Carn Brea, 129 to 131; Cook's Kitchen, 12 to 12½; Dolcoath, 56 to 56½; East Pool, 35 to 35½; Killarney, 1½ to 1½; Mellanor, 5 to 5½; New Cook's Kitchen, 6 to 6½; North Busy, 1½ to 1½; Penhall, 1½ to 1½; Phenix, 3 to 3½; Pedn-drea, 3½ to 3¾; South Caradon, 57½ to 58; South Croft, 9½ to 9¾; South Frances, 10 to 10½; Tincroft, 18½ to 19; West Basset, 15½ to 15¾; West Frances, 12½ to 13; West Tregus, 16 to 16½; Wheal Agar, 9 to 9½; Wheal Basset, 5 to 5½; Wheal Comford, 4 to 4½; Wheal Grenville, 8½ to 9; Wheal Hony, 10 to 10½; Wheal Peavor, 18½ to 19; Wheal Prussia, 1½ to 1½; Wheal Uny, 2½ to 3; Wheal Boys, 2½ to 2½; Wheal Jewell, 1½ to 1½.

—Mr. J. H. REYNOLDS, stock and share broker, Redruth (March 31), writes:—During the week a fair business has been transacted in all the leading shares, but Carn Brea, Dolcoath, and East Pool do not close at their best. Wheal Agar is in demand at higher rates, also South Frances. Following are closing quotations:—Blue Hills, 3½ to 3¾; Carn Brea, 130 to 132; Cook's Kitchen, 12 to 12½; Dolcoath, 56 to 56½; East Pool, 35 to 35½; Gunnislake (Clitters), 4½ to 5; Levant, 6 to 6½; Marke Valley, 1½ to 1½; Mellanor, 5 to 5½; New Cook's Kitchen, 6 to 6½; North Busy, 1 to 1½; North Herodsfoot, 10 to 12½; Penhall, 1½ to 1½; South Caradon, 60 to 65; South Croft, 9½ to 9¾; South Frances, 10 to 10½; Tincroft, 18½ to 19; Tregus, 16 to 16½; West Basset, 15 to 15½; West Frances, 12½ to 13; West Peavor, 16½ to 17; West Tregus, 16 to 16½; Wheal Agar, 9 to 9½; Wheal Basset, 5 to 5½; Wheal Comford, 4 to 4½; Wheal Grenville, 8½ to 9; Wheal Hony, 10 to 10½; Wheal Peavor, 18½ to 19; Wheal Prussia, 1½ to 1½; Wheal Uny, 2½ to 3; Wheal Boys, 2½ to 2½; Wheal Jewell, 1½ to 1½; Wheal Killy, 2 to 2½; Wheal Peavor, 18½ to 19; Wheal Prussia, 1½ to 1½; Wheal Uny, 2½ to 3; Wheal Boys, 2½ to 2½; Wheal Jewell, 1½ to 1½.

—Mr. JOHN CARTER, mine shareholder, Camborne (March 31), writes:—Our market has been quiet during the week, and prices have suffered a relapse, transactions during the past fortnight having been chiefly on speculative accounts, there has been a consequent pressure to sell for cash during the last few days. Carn Brea has fallen to 130, Dolcoath declined 10s., West Basset 10s., Wheal Peavor 20s., Pedn-drea 5s. Wheal Agar declined to 8½, but recovered to 9 buyers to-day. West Frances improved to 15, but closing weaker at 13; the flat lode at the 154 cross-cut, which has been driven 100 fms., has been out about 3 ft. and produces a little tin. South Frances have been in better demand at 10 to 11. Annexed are closing quotations:—Blue Hills, 3½ to 3¾; Carn Brea, 129 to 131; Cook's Kitchen, 12 to 12½; Dolcoath, 56 to 56½; East Pool, 35 to 35½; Mellanor, 4½ to 5; New Cook's Kitchen, 6 to 6½; North Busy, 20s. to 25s.; Penhall, 1½ to 2; Pedn-drea, 3½ to 3¾; South Caradon, 57½ to 60; South Croft, 9½ to 9¾; South Frances, 10 to 10½; Tincroft, 18½ to 19; West Basset, 15 to 15½; West Frances, 12½ to 13; West Peavor, 16 to 16½; Wheal Agar, 9 to 9½; Wheal Basset, 5 to 5½; Wheal Comford, 4 to 4½; Wheal Grenville, 8½ to 9; Wheal Hony, 10 to 10½; Wheal Peavor, 18½ to 19; Wheal Prussia, 1½ to 1½; Wheal Uny, 2½ to 3; Wheal Boys, 2½ to 2½; Wheal Jewell, 1½ to 1½.

—Mr. M. W. BAWDEN, (Liskeard (March 31), writes:—The mining market continues firm, and most of the leading tin mines have improved in price, with buyers of Carn Brea, Cook's Kitchen, Phenix, United, South Frances, West Frances, and Wheal Agar shares. Wheal Peavor lower. Subjoined are the closing prices:—Bedford United, 2 to 2½; Carn Brea, 132½ to 134; Gunnislake (Clitters), 4½ to 4¾; Cook's Kitchen, 12½ to 13; Devon Great United, 1½ to 1¾; Dolcoath, 56½ to 57; Devon Consols, 10½ to 11; Drake Walls, 1½ to 1¾; East Caradon, 1 to 1½; East Crebor, ¾ to ¾; East Herodsfoot, 1½ to 1½; East Pool, 35½ to 36; Ganton United, 1½ to 1½; Glasgow Caradon, ¾ to 1; Herodsfoot, ¾ to ¾; Hingston Down, 1½ to 1½; Kit Hill Consols, 1 to 1½; Lady Bertha, ¾ to ¾ (1½ paid); Marke Valley, 1½ to 1½; New West Caradon, ¾ to ¾; North Herodsfoot, 12 to 12½; Old Gun Break, ¾ to ¾; Phenix United, 3½ to 3½; Prince of Wales, ¾ to ¾; South Caradon, 60 to 62½; South Croft, 9½ to 10; South Frances, 10 to 10½; South Tregus, 16 to 16½; South Devon United, 3½ to 3¾; South Frances, 10½ to 10¾; Tamar Silver Lead, 1½ to 1½; Tincroft, 19 to 19½; West Basset, 15 to 15½; West Caradon, ¾ to 1; West Crebor, ¾ to ¾; West Frances, 11½ to 12; West Mary Ann, ¾ to 1; West Phenix, 1½ to 1½; West Tregus, 29 to 30; Wheal Agar, 8½ to 9½; Wheal Basset, 4½ to 5, e.p.; Wheal Crebor, 4 to 4½; Wheal Grenville, 9 to 9½; Wheal Hony and Treawny, 2½ to 2½; Wheal Jane, ¾ to ¾; Wheal Peavor, 18½ to 19; Wheal Uny, 3½ to 3½.

MANCHESTER.—Messrs. JOSEPH R. and W. P. BAINES, sharebrokers, Queen's Chambers, Market-street (March 31), write:—Although a much more buoyant tone has manifested itself during the past few days in the market for railway stocks, in most instances where change is recorded better figures rule, and the market in most other classes of securities continues generally dull and inactive. The amount of business reported is small, and of a struggling character, but should the Turkey-Greek question become settled without recourse to war, and should the weather continue as favourable as it has been lately, an upward movement may be expected to ensue very quickly.

BANKS.—The business in bank shares is very meagre in extent, and is confined to those most commonly dealt in on this market, prices realised calling for no remark. The allotment to reach about ¾ in any case.

INSURANCE.—Very little business done, and alterations show slight changes.

ROYAL (Liverpool) are ½, and Queen ½ lower, whilst marine companies are better, Thames and Mersey being ¾, and British and Foreign Marine and Maritime ¾ each higher.

COAL, IRON, &c., AND MINING.—Ebbw Vale are the chief feature this week, both as regards transactions and movement of values; indeed, with the exception of Ebbw Vale shares, very few dealings are marked, but these have been executed several times at constantly advancing figures. The quotations where changed show a majority adverse, some serious declines having to be noted. The following are higher:—Ebbw Vale, ¾; Bilbau Iron Ore, 1; and Sheepbridge Coal and Iron, ½. Lower: Tharsis Sulphur and Copper, 1½; John Brown's 1½; A. Knowles and Sons, ¾; Park Gate Iron, ¾; Bolckows (now quoted ex div.), ½; Llynvi Tondy (also ex div.), ½; C. Cammell's, ½; Darlington Iron, ½; United States Rolling Stock, ¾; and Tees Side Iron, &c., ½.

COTTON SPINNING AND MANUFACTURING.—Some few concerns have taken stock lately, and so far the results cannot but be considered satisfactory, but a great many companies make up at the end of this week, and operators appear wishful to know the results more completely before entering much into new business, the trade generally still being reported discouraging.

TELEGRAPHS.—Some activity has been displayed in Western and Brazilian, they having been done repeatedly, and figures advancing steadily. Anglos, no business reported here. Higher: Western and Brazilian, ¾; Globe Telegraph and Trust, ¾; ditto pref., ½. Lower: Anglos, ordinary, ¾; ditto deferred and pref., 1 each; Direct U.S. Cable, ¾. CABLES: Business is marked in Macclesfield and in Rochdale, the former being quoted ¾ and the latter ½ higher.

MISCELLANEOUS: Business to only a trifling amount recorded. Union Plate-Glass have been done a few times, and quote 1 down; Manchester Carriage, B. are also ½ lower, whilst Manchester Royal Exchange stock is ½ better.

RAILWAYS.—During the greater portion of the past week the value of railway stocks was not materially altered, although a better feeling existed, and developed yesterday into an important advance, more especially in the goods lines and Scotch stocks. The statement that the Powers had accepted the Turkish proposals, and improved reports from the iron manufacturing towns, caused a fierce demand, this being renewed to-day; but on a rumoured disclaimer by the Greeks, markets gave way immediately, Scotch stocks suffering severely, but not closing at the worst; in fact, at the extreme finish the demand looked like being resuscitated, as prices generally re-advanced. Canadian shares have been subjected to a severe depression, but the more hopeful view of affairs was extended to these descriptions, and a distinct rise is quoted. Americans rather neglected, although we anticipate in these a recovery at an early date.

HULL.—Mr. W. FOWLER SUTTON, stock and share broker, St. Mary's Chambers (March 31), writes:—Considerable flatness and inactivity during the early part of the week have been followed by a sharp rise in values in railway stocks yesterday and to-day, arising principally from the anticipated early settlement of the Turkey-Greek question, and to some extent from rather better trade reports. It is extremely difficult to arrive at a satisfactory conclusion as to whether the improvement is likely to be permanent. Although the political settlement is highly probable, and would conduce in a high degree to more confidence generally, what is really wanted is sound home trade, and this mainly depends after all on the prosperity of the agricultural interest. So far we have no great cause for satisfaction in this respect, and undoubtedly, therefore, much will depend on the harvest of 1881. With these goods there is every prospect of good times, but though it is seen it is to be feared we can experience no lasting improvement, though in the meantime there will doubtless be many ebbs and flows both in the prices of stocks and every other commodity. Unsatisfactory rumours about Trunk stocks caused heavy selling last week, the tide has again turned, and they have to-day been buoyant. The traffic increase to-day is comparatively small, but it compares with a large take last year. A better tone has also per-

vaded American stocks, and a general rise would surprise nobody. Local stocks quiet. Hull and Barnsleys have recovered to 5s. discount, and may be expected to further improve. Hull Colliery, 12½; London and Yorkshire, 32½; Yorkshire, 25½; Hull Docks, 8½; Earle's Shipbuilding, 20½; Hull Trams, 9½.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (March 31), writes:—During the past week markets have been more active, owing to the fortnightly settlement being arranged at more favourable rates of continuation to purchasers, and a belief that trade is still quietly improving. The severe weather this spring seems to have carried the speculative reaction to its extreme limit; but with cheap money there is every reason to anticipate the dullness is now passing away.

In shares of coal, iron, and steel companies prices have generally improved in sympathy with the iron market. Steel Company of Scotland have advanced 13s. 9d. per share; Monkland (preference), 5s. 6d.; Arundel Coal, 5s.; Ebbw Vale, 2s. 6d.; Marbella, also Omoa and Cleland, each 2s.; and Monkland, 1s. 6d.; but Glasgow Port Washington have declined 5s. 6d., and Chillington Iron, 1s. 6d. In the Scotch pig iron market the price of warrants has advanced from 47s. 10½d. to 49s. 5d., owing to signs of the spring demand setting in, and the belief that the stocks of consumers are now getting low. There is no doubt at present low prices and with the oversold account there is considerable inducement to buy, which is only deterred by the heavy stocks and uncertainty as to the demand from America. The continental reports, however, are favourable, and the Clyde shipbuilding trade continues very active, and with good prospects. Benhar has improved from 9s. to 10s. Clyde Coal shares declined to 77s. on a difficulty regarding their royalties with the town of Hamilton, but have now recovered to about 81s.; Bilbau Iron are at 29; Bilson and Crump Meadow, 60s.; Bolckow, Vaughan, 27½ ex div.; Cardiff and Swansea Colliery, 40s. to 50s.; Chapel House Colliery, 10s. to 20s.; Chillington Iron, 6s. to 6½; Ebbw Vale, 9 to 9½; Henry Briggs, 4, 10 to 12; John Bagnall and Sons, 7s. 6d. to 15s.; Lochore and Capelrade (pref.), 11; Louthouse Colliery, 75s.; Marbella Iron, 3s. to 8s.; Monkland Iron and Coal, 3s. to 3½; (pref.), 75s. to 77s.; Oakham Colliery (pref.), 5s.; Omoa and Cleland, 28s.; Parkgate Iron, 5s. prem.; Steel Company of Scotland, 10½ to 10¾.

In shares of foreign copper and lead companies the tendency of prices is generally downwards. Tharsis has declined 38s. 9d. per share, Rio Tinto 27s. 6d., Tharsis (new) 5s., and Canadian 1s. 6d. Tharsis shares have declined from 30½ to 35½; sellers, the company announces that their debentures for 80,400, due on June 1 will be duly paid. Canadians are at 42s. to 43s.; Huntington, 54s. 6d.; Panulicillo, 6½; Pierrefitte (pref.), 10 per cent. 18s.; Rio Tinto, 23; Yorke Peninsula, 5s. to 7s. 6d.; and ditto (pref.), 17s. 6d. to 20s.

In shares of home mines business continues quiet in sympathy with the metal markets. Glasgow Caradon have advanced from 18s. to 20s. Blaen Caelan are at 21s. 3d.; Bwlch United, 20s. to 30s.; Cwm Pryf, 7s. 6d.; D'Eresby Mountain, 30 to 40; East Buller, 12s. 6d.; East Chiverton, 30s. to 40s.; East Long Lake, 30s.; East Rose, 15s. to 20s. prem.; Gawton, 25s. to 27s. 6d.; Gaver Consols, 27s. 6d.; Herodsfoot, 12s. 6d. to 17s. 6d.; Indian Queens, 40s. to 45s.; Killbreth, 15s. 6d.; Lady Ashurst, 25s.; Lady North, 15s. to 20s.; Lead Hills, 45s. to 47s. 6d.; Llanrwst, 2s. 6d.; Nant Rhys, 15s. to 17s. 6d.; North D'Eresby, 20s. to 25s.; North Hendre, 5; North Levant, 8; North Penstruthal, 25s. to 30s.; North Molton, 5s. to 7s. 6d.; New Kitty, 27s. 6d. to 32s. 6d.; Parka Consols, 40s. to 50s.; Port Nigel, 30s. to 40s.; St. Just United, 52s. 6d.; South Crebor, 15s. to 20s.; South D'Eresby, 13s. 9d.; Tamar, 15s. to 20s.; Tin Hill, 25s. to 30s.; West Kitty, 65s. to 70s.; Wheal Agar, 8½; Wheal Crebor, 83s. 9d.; and Wheal Owles, 5½ to 6.

In shares of gold and silver mines there is no particular alteration to notice. Flaxland (London) is at 2s. 6d. higher. Australian Mines are at 5s.; Brazilian Gold, 15s. to 25s.; Calico "Bis," 27s. 6d. to 32s. 6d.; Gold Association of Canada, 17s. 6d.; Gold Coast, 6s.; Great Southern of Mysore, 10s.; Indian Trevelyan, 2s. 6d. to 5s. prem.; New Gold Run, 5s.; Nava de Jadraque, 10s. to 15s.; Pasternera United, 7s. to 9s.; Silver Peak, 22s. 6d.; Wynad Perseverance, 22s. 6d.; and Victoria (London), 5s. to 8s.

In shares of oil companies prices are generally lower. Broxburn, Uphall, and Young's Paraffin are each reduced 7s. 6d. per share, and Oakbank 2s. Young's Paraffin declined from 11½ to 10½, and is now firmer.

Business in miscellaneous securities continues very dull. London Sulphur are at 55s.; Law's Chemical, 3½ to 5½; Langdale's Chemical, 52s. 6d.; and Newcastle Chemical, 80s.

On Contango day (Monday) the following were the rates of continuation current:—Contangoes: Even, 1d. on Behar Coal; 2d., 3d. on Canadian Copper; 3d., 5d. on Clyde Coal; 1s. 3d. on Ebbw Vale; even, 1d. on Caradon; 3d., 2d. on Glasgow Port Washington; 3d. on Huntington; 3d. on Marbella; even, 1d., 1½d., 2½d., 3d. on Monkland Iron; 3d., 2½d., 3d., 4d. on Pref.; 1½d., 2d. on Omoa; 6d. on Panulicillo; 2d. on Parys Copper; 7d. on South Indians; 4½d. on Steel Company; 4d. on New; 8d., 10½d., 1s., 1s. 3d. on Tharsis; 9d. on Wheal Crebor; 1s. on Wheal Grenville; 1s. on Broxburn; 3d., even, 3d., even, on Uphall Oil; even, Rio Tinto, Paraffin. On comparing the closing-up prices continuing on to-day for the undermentioned shares compared with those current at last settlement for the same shares the variations thus shown to have taken place during account are as follows:—Rio Tinto have advanced 10s. per share; Tharsis, 5s.; Monkland (pref.), 4s.; Panulicillo, 1s. 3d.; and Monklands, 1s. On the other hand, Steel Company of Scotland and ditto New have declined 1½ per share; Broxburn Oil, 12s. 6d.; Young's Paraffin, 10s.; Glasgow Port Washington, 9s.; Oakbank Oil, 4s.; Clyde Coal, 3s.; Canadian Copper, 2s. 6d.; Huntington, 2s. 6d.; Marbella, 2s. 6d.; Omoa and Cleland, 2s.; Benhar Coal, 1s. 6d.; and Glasgow Caradon, 6d. The remainder unaltered.—Glasgow Caradon, Richmond, Tharsis (New), and Uphall Oil.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and sharebrokers, Princes-street (March 31), write:—The railway market remained dull and depressed till yesterday afternoon, when a rally commenced. Since last Thursday Caledonian has risen from 102 cum to 103 ex dividend, North British has receded from 79½ to 78½, Glasgow and South-Western from 115½ to 113½, Great North of Scotland at 62½ shows little change, Highland has fallen from 105 to 104. English railways after being flat have also recovered to some extent. Canadian and American stocks have improved. Clydesdale Bank has receded from 222 to 220, and Commercial from 250 to 249½. There is no other change to report in British stocks. Insurance shares have maintained their prices. The shares of several mining companies have been depressed, but there has been a recovery from the lowest price reached. On balance Clyde Coal have fallen from 83s. to 80s., Canadian Copper from 44s. 6d. to 43s., Glasgow Port Washington from 36s. to 30s., Huntington Copper from 58s. to 54s. 6d., Tharsis from 40½ to 38½, Marbella Iron have risen from 82s. to 85s., and Monkland Iron Preference from 70s. to 77s.

IRISH MINING AND MISCELLANEOUS COMPANIES' SHARE MARKET.

CORK.—Messrs. J. H. CARROLL and SONS, stock and share brokers, South Mall (March 30), write:—Markets continue very dull, and business limited. Great Southern have relapsed from 114½ to 113½, and Midlands are flat at 84½. Bandons are also easier at 86, and Macrooms are offered at 6½. National Banks are very steady at 67½, and Munsters at 6¾. Hibernians remain 43½, and Provincials 60½. Cork Steam Traction are very dull at 12½, but are now buyers at 12½. Lyons shares have changed hands at 4½ to 5½. Gas shares at 4½ to 5½, and Harbour Board Debentures at 102½ to 102¾.

MELBOURNE EXHIBITION.—On arriving in the rear of the British court by the "north-west passage" (as it literally is) one of the first exhibits one comes to is one which, though of very great importance, comes but rarely under the notice of the gay and insouciant promenaders who do the great of each court as they do the Collins street block. But bankers, shipowners, merchants, and business men generally—the very classes, in fact, who are generally supposed to have had something to do with making Australia what it is—take a remarkably keen interest in the large collection of Milner's fire-resisting safes, boxes, and strong-room doors, which is exhibited by the makers through Messrs. Bright, Brothers, and Co., representatives and agents throughout the Australian colonies for all Mr. Milner's manufactures. It is not necessary here to go into the history of the manufactures of fire-proof safes, but it may be mentioned that a good authority upon the subject states that it was not until 1834 that the modern fire-proof really came into existence; it was not until the date of Marr's patent in that year that the principle of enclosing within the lining of the safe some kind of fire-resisting composition which possessed the power of arresting the progress of heat from without inwards was adopted. Since then, of course, the materials have been many, iron, brick, and cement, and the safe writer, whom I have already quoted, lays it down that the desideratum in a good safe is that the iron should be of sufficient thickness to preclude all danger of its being injured by a fall or broken into by violence; that the door should fit too closely for any prying instrument to be inserted between its edge and the framework of the body of the safe; that the large outer lock should be so constructed as to afford no possible space in which gunpowder could be exploded with the object of shattering it; and that the fire-resisting composition should be so constituted as to give out moisture and vapour, when acted upon by external heat, to an extent sufficient to prevent paper and parchment from charring or destruction for so long a time as possible. It is important also that this composition should be so enclosed as to prevent any undue or wasteful escape of vapour. All these requisites it appears have been attained by Messrs. Milner and Company. The nature of their special fire-proof composition is somewhat of a secret, but it doubtless consists of some special combination of ground alum, gypsum, &c., with small absorbent substances, such as sand and sawdust, and containing small vessels of water, which, when broken by heat, saturate the whole. The materials then give out steam to an extent which will keep the internal temperature of the safe at a maximum of 212° Fahr. far longer than the duration of any ordinary conflagration. It is not long since, by the way, that Messrs. Milner obtained a perpetual injunction in Chancery, restraining other firms from selling safes containing their particular vapourising material, under a penalty of 500l. The safes are all made of hardened drill-proof steel, or of iron and steel rolled together to Messrs. Milner's special order, the Speigelen used by the American makers having proved a failure. It is worthy of note, by the way, that the hints given by the celebrated burglar, Casely, during his trial for the great Cornhill jewel robbery, were at once taken up and acted upon by Messrs. Milner. It was one of their own safes, but one of their earliest manufacture that had been opened; but Casely's revelation showed them the weak points, and Milner's

patent dove-tailed wedge-guard, so contrived as to present the slightest possible leverage or prising being available in any attempt to open a safe, renders the special thief-proof safe practically impregnable and inviolable to the most skillful of burglars. In one of their thief-proof safes, which particularly attracted my attention, I was much struck by the extraordinary ease and simplicity with which nine large dove-tailed wedges of substantial steel, jutting out from the outer door, have fitted into their places in the inner frame of the case, the turn of a tiny little key, fit for a purse or pocket-book, secures them there beyond all risk of violence or leverage, and without the possibility of damage to the lock itself by gunpowder while shooting the bolts at the same time. The particular lock of which I was watching the operations is another of Messrs. Milner's specialities, and is termed by them "Milner's gunpowder and drill proof unpickable solid lock." It is due to the enterprise of Messrs. Bright, Brothers, and Co. that Australia has now such a splendid opportunity of importing the safes of this celebrated firm in such variety, from the gigantic bankers' safe, 7 or 8 ft. high, and containing numerous shelves, drawers, and cash boxes—varying in price from 100l. to 200l.—down to handy little safes for business men on a smaller scale. One of these last, about 24 in. by 18 in., and containing ample room for a set of books, together with two cash drawers, is just as much fire-resisting as the larger ones, and only costs, I think, some 12l. or 14l. What business man should be without a fire-proof safe, when such a variety, suitable for businesses of every description, are at his choice?—*Bendigo Advertiser*, January, 27, 1881.

Messrs. Milner have since received a telegram that they have been awarded a first prize.

Meetings of Public Companies.

MUNTZ'S METAL COMPANY (LIMITED).

The eighteenth ordinary general meeting of Muntz's Metal Company (Limited) was held on Monday at the Great Western Hotel, Birmingham,—Mr. JAFFRAY (Chairman) presiding. The other directors present were Messrs. H. WIGGIN, M.P. (deputy Chairman), S. BARKER, G. HEATON, W. MIDDLEMORE, and P. A. MUNTZ. The annual report and statement of accounts having been taken as read,

THE CHAIRMAN, in moving their adoption, expressed first of all his regret that Mr. George Frederick Muntz was unable to attend in consequence of ill-health. He went on to say that he had the duty a few months ago of presiding at a meeting of another kind, where the dividend for a series of years had been 20 per cent., and there was a complaint at that meeting of the monotony of the proceedings. (A laugh.) Now he apprehended that those shareholders of Muntz's Metal Company who had been for many years shareholders knew that no such complaint of monotony could be brought against this company, because during the 17 years it had been in existence the dividend had ranged from 5 per cent. to 15; and no year since the establishment of the company, he was bound to say—and he said it with all frankness—had shown a less amount of profit than the year to which the accounts now submitted related. That was not surprising to those who knew what had been the history of the metal trade during the past year. When they met last year trade was in a state of almost feverish activity. From November, 1879, to the period at which they met the orders were larger than they had been for some time, and the prices were higher. Soon after that period—and it was in the knowledge of almost every man who had given any attention to these matters—there was a sudden drop, so to speak, in the activity of trade, and especially in the metal trade. Now at that time they had a very large number of orders unexecuted, and one of the anomalies of the metal trade was that the buyer had the benefit of a fall in price; that was to say, if the orders came to them in March, when the price of copper was very high, and were not executed, and could not be executed within a very short period, especially when they came with such a rush as they did then, if they were not executed until the price of copper had dropped, then the buyer had the advantage of that drop. That was one of the anomalies of the metal trade, and here it was that the company's lost took place. They were obliged to cover themselves with the raw material to execute those orders, and when the price of copper dropped in April by about 18l. or 20l. a ton they could easily reckon what the loss would be upon the large stock they must necessarily hold of the raw material. The losses which he was speaking of all occurred in the first six months of last year. The company not only did not make a profit, but they made a somewhat considerable loss; but in spite of the keen competition, and the low range of prices at which they had been obliged to work during the last six months of the year, they had recouped that loss, and had made during the last six months the balance of profit which was exhibited upon the balance-sheet. Now that was the precise condition of affairs. That was how the small amount of profit which they saw had accrued. The board could do nothing else. Every business man must know that, having the orders, he must cover himself with the raw material to execute those orders. They were obliged to do that, they were caught in the process, and they lost upon the stock of copper something like 18l. or 20l. a ton. If the board had the same set of circumstances again occurring, he did not see what any business man could do other than the directors did. (Hear, hear.) It was no satisfaction to them to know that others suffered in the same or in a greater proportion, but it was the fact that many other manufacturers did suffer great loss from the same cause. With reference to the question of low prices and keen competition referred to in the report, he might say that there were comparatively few houses in this trade, and if by mutual arrangement some range of prices, not to the disadvantage of the customer, but fairly to the remuneration of the capitalist, could be agreed upon, this company for one would not stand in the way of such an arrangement; and they were in the hope that when wiser counsel prevailed such an arrangement would be made. (Hear, hear.) In the meantime, they had carried out the policy which the shareholders sanctioned year after year—that under any circumstances even at the loss of profit altogether they must keep their connection. (Hear, hear.) That was a principle he had stated year after year, and one which the shareholders, by their acquiescence, had sanctioned. Now, had they kept their proportion? That was the question. Well, they had done so, and they had somewhat increased it. Their proportion of the sheathing trade of the country was about one-third, and they had not only kept that by the policy they had adopted, but they had increased it. The amount of sales last year was in excess of 1879 and so far as this year has gone they were quite up to the average of the business they had done in the past; so that it would be seen that, if any combination took place such as they desired and hoped and expected, they would be able to reap the full benefit of that combination by keeping their connection together as they had done. Well, some people seemed to be afraid that they had seen the best days of the company. He did not believe it. In certain departments of the trade the company were beating all competitors, and if the company were forced to take low prices for their manufactures it was not they who led the way in that direction. They simply acted upon the defensive, and decreased their prices as a decrease was forced upon them. In connection with that view of the subject, he would recall their recollection to what had been done during the 17 years the company had been in existence. In the first place, they had paid an average of 9 per cent. during the whole 17 years. Considering the risks attendant upon a manufacturing company, and especially upon a company dealing in the commodity they did, that was a very fair rate of interest. At any rate, he did not know any other investment which, considering the price paid for the shares, yielded so handsome a dividend for a consecutive number of years. Then they had paid a handsome dividend for the business 4l. 0d. per share; the plant and machinery, 14,000l.; land and buildings, 516l. 7s. stock fluctuation suspense account, 44,000l. In all they had written off from the profits of the company a sum amounting—besides the dividends—to 104,161l. in 17 years. The company that could afford to write off at that rate, and pay 9 per cent., was one which any reasonable man would desire to be connected with. And if any discontented shareholder should wish to rid himself of his investment, a great many people were watching the opportunity of stepping in and relieving him of his onerous responsibilities. (A laugh.) He did not know that he had any further observations to make upon the report, certainly none upon the statement of accounts. Since their last meeting one of the directors, Mr. Marriott, had died. He was for many years not an active member of the board, but upon subjects affecting claims upon the company a director whose knowledge and experience were of great service. The board did not propose—until they had looked around them, and seen how they could benefit the company best—to fill up the vacancy so occasioned. Before concluding, he might state that several members of the trade had considerable interests in the company as shareholders, and it was comforting to know that within the last week or so one of them had doubled his holding in the company. He had mentioned this in order to give encouragement to any shareholder who was anxious about his investment. It was quite right that they should be anxious about their investments in these times when safety was not always the same as profit, but such was the opinion of some men in the same trade as themselves that they were increasing their holdings rather than diminishing them. (Applause.)—Mr. WIGGIN, M.P., seconded the resolution.

Mr. A. ROLLAND enquired at what amount the stock fluctuation suspense account stood last year.—The CHAIRMAN replied that it stood at 46,000l., and was then put as an asset. He might improve upon the occasion to say that they had had it on the other side for a series of years. They had had as high as 33,000l. and 30,000l. They had dealt with this suspense and credit, as the shareholders knew, neither as profit nor loss. They did not distribute it if they made a profit, as they had done for a series of years amounting to 33,000l. one year. They did not distribute it as profit, and on the other hand this year they did not consider it a loss. So long as the company was a going concern it was neither profit nor loss. If they came to wind-up, then of course it would be a different matter. (Hear, hear.)

Mr. JOSEPH ASH said he thought the suspense account was a mistake, and he would like to have it cleared away altogether. He had had anything of the kind. He wanted to know whether the management gave the whole of their time and services to the company. He had no doubt that the company would hold its own, but he wanted to see fresh patterns and models and machinery, and he feared the thing was going to sleep. (A laugh.) Other people were trying to get the company's customers, and what he wanted to see was that the company put forth all its strength.

THE CHAIRMAN, in reply, said he thought that this bugbear of the suspense account had been pretty well laid. In 1873-4-5-6 they had placed nearly 90,000l., and something more in the preceding years, to the credit of the suspense account. Would any sensible man stand up and say, in the face of the fluctuations which took place in metal—fluctuations not due to production and consumption, but to various causes of a financial kind—that in 1873 they should have divided as profit 33,000l., in the following year 30,000l., in the two following years upwards of 15,000l. each as profit, when the next year might result in a loss equal to any of these amounts he had read. He thought they were all agreed upon this, but he pointed to his astonishment that one gentleman, whose keen observation apparently ranged over the whole area of the business of the company, had not made up his mind upon one of the essential principles which should regulate their accounts. With regard to management, it was difficult to know specifically what the gentleman referred to wanted. He accused the directors of not giving due attention to the business, at the same time he charged them with being aggressive in their action. They could not be both, and the fact was that Mr. Ash was

would be met with by-and-by in the 100 fm. level, and in the levels below that, but as the ore was supposed to dip westward it would be many months before they could hope to have it in the 100 fm. level; still longer, of course, at the 110. They had been able to keep the mine perfectly drained without any sort of interruption, and there had been consequently no check to the rate at which they had been deepening the mine. They had been sinking both the engine-shafts (the old one in the eastern part of the mine, and Gundry's in the western) without any sort of hindrance. In Gundry's shaft they had passed between the 110, which was the deepest level yet reached, and the point at which they had now arrived they found some very good branches of copper ore, and he thought they might look forward to something very good at the next level. In the eastern ground—which was the part which their predecessors worked chiefly—they had been able to make satisfactory progress in sinking the shaft, notwithstanding the very strong torrent of water there had been at this part of the mine. The lode had latterly improved, and had produced some copper ore and some rich stones of tin ore; and he trusted that when they got down to the proper depth for driving a level they would have something there that would be worth pursuing, and something that would contribute to the returns. There was a piece of ground lying to the north of this mine, in which it was known that there was another lode, but not one that had been found productive by anybody working in the adjoining mines; still it was felt that it would be worth exploring, and a cross-cut level was going out towards it, which could not now be very long before it intersected it. The outlay during the past year had included a considerable amount expended on improved dressing machinery and floors. The whole of the dressing arrangements were now complete, and gave very satisfactory results; indeed, the ore was prepared for market with great economy and regularity in a satisfactory way. If they had had even the price for copper which they had at the beginning they would have made considerably larger profits, and judging from his experience he thought they might certainly have expected to get a price which would have doubled their profits. Whether such good times were in store for them or not nobody could say; but even at this, what might be called, minimum price for copper ore they were making a reasonable rate of profit—perhaps it deserved a better term, when it was remembered that besides paying 25 per cent. on the paid-up capital, they were building up a reserve and making other prudent provision for the future.

The CHAIRMAN proposed the adoption of the report and accounts.—Mr. JOHN WILK seconded the proposition, which was carried unanimously.

Mr. WILK moved the re-election of the retiring directors—Messrs. R. Hunt and E. J. St. John—and in doing so said the best energies of those gentlemen had been devoted to the company, with which they had been connected from its commencement. The report of Capt. Gilbert was, so far as he could judge, without exception the most favourable mining report he had ever read, for at every point of the mine there seemed to be something not only promising, but promising to be better.

Mr. S. J. WILK seconded the motion, which was carried, and the Chairman returned thanks for the re-election of himself and his colleague.

On the motion of Mr. P. H. P. seconded by Mr. E. J. St. John, Mr. C. H. H. was re-appointed auditor for the ensuing year.—The meeting then closed with a vote of thanks to the Chairman.

GREAT HOLWAY LEAD COMPANY.

An ordinary general meeting of shareholders was held at the offices of the company, Great St. Helen's, on Monday.

Sir STEPHEN WALCOTT, K.C.M.G., in the chair.

Mr. E. J. BARTLETT (the secretary) read the notice calling the meeting; the report and accounts were taken as read.

The CHAIRMAN said he was pleased to see so many shareholders present, as it was an evidence they took an interest in the concern, and this was a great stimulus and encouragement to the directors. The nature, extent, and value of the property was, he took it, so well known and appreciated that it would be waste of time to enlarge upon any of these topics, and, therefore, he proposed to only touch briefly upon one or two of the salient points and considerations suggested by the reports. He would earnestly ask the shareholders to peruse those reports, especially that of the mining captain, Captain Harris. It was a clear and able document, and he thought would be satisfactory to the shareholders. The first question they would ask was what was the directors' opinion of the present state of the concern? He was happy to tell them that in his opinion, and in the opinion of his colleagues, the property was now in a better position than they had ever seen it or known it. (Cheers.) That would be seen by reference to the amounts of lead and blende which they had raised and sold since the time they commenced doing so, but he admitted that it had not quite equalled his expectations this time last year, but the weather and the markets had been against them, and also the general depression of trade throughout the country. (Hear, hear.) He thought there seemed to be a slight turn in their favour in the lead market. On looking over some figures he found that the price of lead in the 33 years had averaged 12 1/2 guineas per ton, but in 1873 the average had sunk to 10 1/2 2s.; but the market had been slightly on the rise, and he thought was likely to continue. The last sale of the company's lead, which took place on Saturday was at the rate of 11 1/2 10s. per ton, which was nearly up to the average of the last 33 years. As regarded lead, the Chinese up to eight years ago were the best and largest customers, but somehow or other after that period they went to California for their supply of lead. But they had now begun to return to this country for their supply, which was a favourable feature. The exports of lead in 1880 were in excess of those of the previous year by about 7000 tons, which showed a favourable turn. Then the exports of lead from this country to the United States and elsewhere had fallen off. The exports of lead to China increased in 1880 over 1879 by about 4000 tons. These little facts went to show that the price of lead had been going up, and was likely to remain as it was, or rather go up than down. Therefore, the directors considered that the prospects of the company were very good, and were likely to continue so. (Hear, hear.) In conclusion, the Chairman moved that the reports of the directors and Capt. Harris, together with the statements of the accounts, be received and adopted, and passed and allowed.

Mr. W. W. MACKESON, Q.C., in seconding the resolution, said he wished to call only two things to the attention of the shareholders—the present treasures they had, and the wonderful work they had done since August last. Without undervaluing the future prospects (which no doubt would be referred to by Mr. Bartlett) he wished to point out the present treasures which they had at Eytton's, at Partridge's, and at other points. In the report of the directors, in April, 1878, it was stated that the future prospects of Eytton's was founded upon this—that Eytton's was considered the most valuable lode, as 1500 tons, valued at 16,000l., had been raised by the former owners. But these were not the treasures to which he wished to call their attention. He next came to Roskell's shaft. At Roskell's operations are commenced by the company to the Great Holway lode at 120 or 130 yards, and when hit to water Eytton's. They had very nearly hit the lode at the south-western part of the cross-cut. The water was breaking through; they had the water, and no doubt in a day or two they would have the lead. But these were not the treasures he referred to. When the committee were on the spot in the last long vacation above the 100 yard level at Roskell's, a south and north lode was hit, which nobody knew anything of. How far that lode would go to the north or the south nobody could tell, but according to all mining and practical authorities, if it went along far enough it would hit the Great Holway lode, which they were seeking for. But these were not the present treasures he was referring to. He then took them to the bottom of the shaft, at the 80 yard level, he took them to the magnificent discovery which Farry made in 1875, of which he reported that hundreds of tons would be raised. That east and west lode crossed the south and north lode, and there was a good lode there as soon as they had finished operations at Roskell's lode. But these were not the present treasures to which he referred. Take the level engine-shaft. There it was virgin ground from the 60 down to the 80. By some extraordinary circumstance, under the old management, the tributing there stopped until January, 1880, when the new manager, Capt. Harris, put on tributors. First, it produced 1 ton of lead per fathom; in September it increased to 2 tons per fathom; in October to 4 tons per fathom; and by a later receipt that morning from Capt. Harris it had increased to 5 tons per fathom. With respect to Garden shaft there were two pairs of men on, and the accumulation was so great that the manager scarcely knew what to do to get rid of it. At the Brammoek shaft, which the company never touched before, there were seven pairs of men on. When the committee were sent down in August they were told to secure the company a monthly supply of lead and blende, and the committee had fulfilled their duty—(hear, hear)—and there were the present treasures which they had, represented by lead and blende, which the directors were not ashamed to give the shareholders particulars of month by month. On Saturday they sold 25 tons of lead more at an increased price of 11 1/2 10s. per ton. These were present treasures, and not future prospects. When the committee were down in August at the mine they ordered a new set of crushing machinery from Sandycroft and Co., which was put up, and the new engine was started on Dec. 8, and was christened after Mrs. Bartlett. The whole concern was in the most perfect order, and it had not been for the frost they would have had still greater returns. That was the crushing mill. Now, the next item was with reference to Roskell's. He was telling them the works that they had done, or commenced and finished, since the long vacation under the superintendence of the committee. At Roskell's they were sinking by manual labour. Now, he did hate manual labour. (Laughter.) Now they had a boring machine—a Roskell's rock-drill boring machine, which they bought of Salmon, Barnes, and Co., of Ulverston. The committee were directed to see that in full operation. After two trials the machinery was made perfect. The drills had been at work ever since, and now had driven the cross-cut to a point at which it nearly cut the lode. The next most material thing to attend to was the pitwork, so as to have perfect command of the water. What had they done? They had sunk below the 110 cross-cut, and they had a reservoir or reservoir to retain all the water that might come either from one side or the other, and they got the pitwork and pumping machinery down to the bottom, and this had been completed since the report was sent round. Let the water come from any cause it might, the whole of the apparatus was perfect. They could raise it at any moment, and so far as he was concerned he wished it would come to-morrow. The next improvement he could lay claim to as having been introduced by himself—this was the connection by tramroad between the level engine and Roskell's shafts. When he saw those large piles of stuff at the level engine-shaft he wondered how they were to get them down to Roskell's, where the crushing machinery was to be placed. It used to be done by cart and horse over a bad road. He determined to do away with that, for he hated horse labour as much as he did manual labour. He determined to have something in the shape of machinery, and so Sandycroft and Co. suggested the addition of a tramroad, which was part of the 470l. expense. Then previously they had ordered a tramroad between Garden shaft and Roskell's shaft. How was the lead and blende to be brought down from Garden shaft? The committee, however, recommended this tramroad, and accordingly it was done. By these means the whole of the ore could be brought down to the cross-cut in a few minutes. The next most material thing was a changing house for the men. They had utilised the reservoirs, and greatly improved them. After some further observation Mr. Mackeson concluded by seconding the adoption of the report.

Mr. E. J. BARTLETT: Gentlemen, I shall detain you but for a very few minutes. I presume you will be satisfied with the figures put in the balance-sheet, but if there are any questions I shall be

happy to answer them. With regard to the lead sold on Saturday to which the Chairman has alluded, it is a portion of the estimated quantity in the balance-sheet put down at 990l. The Captain expected to be able to sample 15 tons of lead in the week, but I was very glad to say he managed to bring that quantity up to 25 tons, and although we valued it at 11 1/2 10s., it has realised 11 1/2 10s. (Hear, hear.) *En passant*, let me say that the Great Holway ore is known for its great richness in silver, and as far as North Wales is concerned we are realising both for lead and blende nearly the highest prices of the whole district. (Hear, hear.) The report of the manager is so clear that it renders it unnecessary for me to dwell either upon the present position or the future prospects of the undertaking. You must have observed the cautious way—prudent man as he is—in which Eytton's workings are alluded to. Not having seen those workings, but forming a careful opinion of the probable results, he tells us we may expect to get a deposit of ore there. Now from the best information, and long before Capt. Harris assumed the management, I can give you the result of the examination I made. Although we have been led to believe that we shall ultimately get a return of 80 tons a month, I have put it down at 50 tons so soon as we have drained the water there, which we shall do after driving the west upon the course of the Great Holway lode. At the next point we are led to believe we shall get an additional deposit of ore lying between Eytton shaft and Partridge shaft, so that as the great cross-course comes down that has been proved in the southern portion of the set, it will intersect the east and west lodes between Partridge and Eytton shafts, and we expect an additional deposit of ore. Capt. Harris, in his report, reached me this morning, speaking of the 60 at level engine-shaft says it has further improved, and is now yielding close upon 5 tons to the fathom. The present cost of raising that lead and charging the due proportion of fixed expenditure to it leaves us a profit of 35l. for every fathom driven, and this too at the present low prices for lead. It does not follow when we mention 5 tons per fathom that we are taking the whole of that away. We are only able to stoop a certain amount, and that has yielded us 5 tons of lead per fathom, leaving at the same time what we call "reserves" in the mine. A word with regard to the deposit of ore where the dam has been put. It may strike many of the shareholders, especially those who had only recently joined us, that the water is a serious question for Great Holway, but let me tell you that if Roskell's shaft had been finished by the former owners we might never have been the possessors of this property. You have furnished us with money from time to time to supply the plant, and although the balance-sheet may give you an idea of what you have required, no one can form any idea of its vastness unless they go to visit it. It is not necessary that one should be a miner to form an idea of this property. I throw out the hint so that during the summer some of the shareholders may be induced to go and see the concern. It would really repay the shareholders to go and look at it. With regard to the discovery at the 80, that was a valuable discovery, independent of the discovery at the 60. We had to decide whether we should turn this ore to market or first face the difficulty of getting down our shaft to the 110, cut the Great Holway lode, and then come back and take away the ore now behind the dam. We should have certainly had to sink our shaft and throw out our cross-cut to intersect the lode. We said—better face a certain amount of expenditure, get your permanent pit-work fixed, be prepared for a quantity of water, and not only would you then have one place for development, but 30 or 40, and ultimately bring up your returns to perhaps 200 or 300 tons of lead and blende per month. The pit-work has been fixed. The cross-cut is within 5 ft. at the most of intersecting this lode. We are sure that the lode will be met with, and it will be met with. It is probable that the lode will be carried north or south or be split up? As far as our examination have gone of all the levels, we shall get it at the 110, within the distance named. Therefore it will be only a question of a short time when the shareholders will hear that the lode has been intersected, and that it will in all probability be found productive. We shall then be able to attack the extra course of ore behind the dam. As to the water question when this is done it need not trouble you. The engine is now only working one stroke a minute, and it can do 12 or 13. You may, therefore, be sure that we are fully prepared for any quantity of water, and in fact, with such a quantity of water, we shall be able to take too long were I to go into the other points, but I will call attention to the produce derived from the True Blue vein, which is being worked by tributors, and is producing us 120l. per year. This part of the set is hired by a body of men who are working it without any liability to us—they giving us a certain portion of the value of what they raise from month to month. There are other places where we are doing the same thing, and the probability is that in the future we shall have many such takes, and that these will add materially to our returns. It is not advisable for us to meddle with these things, but there is one essential service that the tributors are rendering us. We shall be able to take the ore out of their workings the direction of the north and south lodes, and be able to attack them from our main shaft in Roskell's. Whether it is in the 60 or at the various other places, unexpected results have been derived, for the property stands to-day in a splendid position. (Cheers.) This result has only been achieved by the most unremitting attention, and a great deal of the credit is due to Capt. Harris's energy and ability in carrying out the works. It is all very well to have a good property and good directors, but if you have not a good man on the spot all the rest counts for nothing. (Hear, hear.) Now, since Capt. Harris has been engaged the energy he has displayed has been marvellous. All his reports have been faithful, and he has not been under and not over the mark. He has said "You are going to have a sale of 20 tons of lead," we have been certain that it was more likely to be over than under the mark. Capt. Harris went there not as a stranger to the Holway district, but as one who believed that he could make the Great Holway Mine a success, and not merely for the sake of the salary we pay him. If he makes the mine a success he knows full well that he will greatly benefit his own reputation, and in doing that benefit his own position and that of his family. With that idea he has stood manfully to his post, and I quite endorse the remarks he has made, not only in his report but in the course of the meeting. He has visited the property that the shareholders in the Holway property that is likely to prove of immense value in the future. (Cheers.)

Mr. ALFRED THOMAS, mining engineer, who has repeatedly inspected the works, was asked to address the meeting, and said—Gentlemen, anything I can say will be simply in corroboration of what has fallen from the previous speakers. It is very gratifying to me as a shareholder, and as the representative of several other large shareholders, and equally gratifying to all present to have heard the very satisfactory statements that have fallen from the directors and from the mining captain. I am not going to trouble you with my opinion of the property generally, because I have very frequently given it in writing and verbally, but still as a matter of corroboration, and having heard the ministerial side, you may now like to hear the opposition, which I assure you in this case amounts to no opposition at all. (Laughter.) I will simply ask you to go back with me to the time of the last meeting. At the last meeting it was announced that the chief operation this company had to undertake was the completion of the gigantic piece of machinery—the 80-in. cylinder engine. There were other minor works connected with the work at Roskell's—the great centre of operations—which required completion. Now what have you done? Now what have you done in the interval? You have erected a powerful engine, for the purpose of working your crusher, 24-in. rolls, and you have also completed the kilns, and the dressing-floors, biddles, &c., and those floors are now capable of returning from 200 to 300 tons of mineral per month. That I know is a very considerable quantity, but it can be treated provided you have the stuff from underground. Great expenses have been incurred with the rock-drilling machinery. Receivers have had to be put in, and an engine for compressing the air, but in its present state you may be congratulated upon its success. The whole of the pitwork has been changed, 20-in. pitwork has been substituted for 12, and you have a new set of shafts, and a new quantity of water. What a quantity, however, is dividends, and for dividends you must look underground, and I think we can see dividends looming in the distance.

The CHAIRMAN: Within "measurable distance." (Laughter.) Mr. THOMAS: The engine-shaft has been sunk from the 80 to the 110. The sinking of the engine-shaft is always a matter of great expense, and I should think this has cost us 50l. or 60l. per fathom. A cross-cut has been put out and extended a considerable distance, and will in all probability intersect the rich east and west lode, and I have no doubt resting on my mind what this will be, and that there will be a section of ground of some hundreds of scores of fathoms, which may be taken away at a great profit. Of course, you must expect an influx of water, because the lodes and cross-courses in this neighbourhood are of such a porous nature, and your engine will have to pump, but that will only be a matter of time. You will then be able to put the other engine to work as an auxiliary, and I think in a few weeks you would drain the whole mine. (Hear, hear.) Thus you will have the whole of the works in the western part, including Eytton's and Partridge's, high and dry. There may be cross-courses intervening, but the general supposition is that the mine will be one for draining the mine. I would ask you, as indicative of the great progress that has been made, to compare the returns of ore made prior to the meeting and the returns made subsequently; and, to come to a more recent date, I would ask you to compare the returns of ore made during the past two months with the two months immediately preceding these last two months, and that I think is the best proof of the great strides being made by this company in the production of mineral, and as the production is increased so we shall be nearer the great object which all shareholders look forward to—dividends. With respect to the management it is everything it possibly can be, and I am sure the directors are having introduced to you your present manager, and I am sure the directors are perfectly satisfied with his services. As to the debentures I am glad you have only issued 1800l., and I think it advisable not to issue any more. If you want more money why not issue some of your unallotted shares? You have a balance of 15,945l., and I object strongly to your encumbering this company with debentures. The returns you have had are only the pressure of better things, and the public are beginning to enquire about your shares in consequence. Some of them, to my certain knowledge, have changed hands at a premium. I would suggest, then, as a shareholder, and on behalf of other shareholders, that you should issue some of your unallotted shares, and I am sure the directors are perfectly satisfied with his services. As to the debentures I am glad you have only issued 1800l., and I think it advisable not to issue any more. If you want more money why not issue some of your unallotted shares? You have a balance of 15,945l., and I object strongly to your encumbering this company with debentures. The returns you have had are only the pressure of better things, and the public are beginning to enquire about your shares in consequence. Some of them, to my certain knowledge, have changed hands at a premium. I would suggest, then, as a shareholder, and on behalf of other shareholders, that you should issue some of your unallotted shares, and I am sure the directors are perfectly satisfied with his services. As to the debentures I am glad you have only issued 1800l., and I think it advisable not to issue any more. If you want more money why not issue some of your unallotted shares? You have a balance of 15,945l., and I object strongly to your encumbering this company with debentures. The returns you have had are only the pressure of better things, and the public are beginning to enquire about your shares in consequence. Some of them, to my certain knowledge, have changed hands at a premium. I would suggest, then, as a shareholder, and on behalf of other shareholders, that you should issue some of your unallotted shares, and I am sure the directors are perfectly satisfied with his services.

Mr. BARTLETT said that since the report had been in the hands of the shareholders several letters had been received expressing the surprise of the shareholders—the agreeable surprise—that greater advantage had not been taken of the power to issue debentures conferred upon the board at a former meeting. The CHAIRMAN said the views of the directors coincided with those of Mr. Thomas. Mr. THOMAS said that as this was a matter for the directors to decide it had probably better be left in their hands.

Mr. WALKER thought that the suggestions conveyed in the report should be acted upon, and that they should issue *pro rata* the 1189 shares. The proceeds would not only pay off the debentures, but give the directors a fund in hand. He would formally propose that the 1189 shares be issued *pro rata* to the present holders. (Cheers.)

The motion was seconded by a SHAREHOLDER and carried unanimously. Mr. WALKER proposed that the retiring directors, Sir Stephen Walcott, K.C.M.G., and Mr. R. C. Mercer should be re-elected directors of the company. When he listened to Mr. Mackeson going over a narration of their present treasures he thought that gentleman made an important omission. Perhaps it was due to natural modesty, but he thought one of their greatest present treasures was an efficient board of directors. (Hear, hear.) None of them could have listened to the details stated by Mr. Mackeson without feeling convinced that they were in the hands of able men, and he was quite sure that they were not inclined to part with any of them. Therefore, he had great pleasure in proposing the re-election of those gentlemen.

Mr. VANS AGNEW seconded the motion, which was agreed to.

The CHAIRMAN briefly returned thanks, and in doing so referred in terms of praise to the signal services Mr. Mackeson had rendered to the company. He also expressed his complete confidence in the manager, who after all constituted the pivot on which most of these things must turn. He thought at the next meeting the directors could render a much more satisfactory return to the shareholders—viz., something in the shape of a dividend.

Mr. THOMAS proposed, and Mr. TELFER seconded the re-election of the auditor, Mr. Alfred Conder, at a remuneration of ten guineas. This was agreed to.

Mr. WALKER said he observed that they had lost the services of two directors, but he had such confidence in the board as at present constituted that he did not think it desirable to add to their number. He proposed that the two vacancies be not filled up.—Mr. BUTRY seconded the motion which was carried. A SHAREHOLDER proposed a cordial vote of thanks to Capt. Harris for his able management at the mine.

Mr. ALFRED THOMAS, in seconding this motion, said there was no agent in connection with any company more honestly deserving of such an expression of thanks as Capt. Harris. None knew but Mr. Bartlett, Mr. Mackeson, and he (Mr. Thomas) the difficulties with which he had been confronted, and which he had surmounted. He had performed his duty well, and the board were satisfied as well as all the shareholders. In him the company had a most valuable servant.

The motion was put and carried, and a vote of thanks having been passed to the Chairman and Mr. Bartlett, the meeting broke up.

WEST KITTY MINE COMPANY.

An ordinary general meeting of shareholders was held at the offices of the company, Walbrook, on Thursday.

On the motion of Mr. F. W. MICHELL, seconded by Mr. PAYNE, Mr. J. B. Reynolds was voted to the chair.

The notice calling the meeting was read by Mr. FRED. J. HARVEY, the Secretary.

The agent's report, which was also read, was as follows:—

March 30.—I beg to hand you the following report of this mine:—Since the meeting held Nov. 25 last the mine has very much improved; that you can not fail to see from the returns of tin which have been made. We have driven the 72 east about 17 fms., through a lode for 14 fms.; worth about 18l. per fathom. For the last 3 fms. driving worth about 9l. per fathom. In the back of the 72 we have put up a rise to the 60; lode worth from 12l. to 40l. per fathom. This rise is about 17 fms. behind the 72. At the 60 we have driven east about 10 fms.; the first 4 fms. worth about 10l. per fathom. The last 6 fms. worth over 30l. per fathom. The lode in the present end is 6 ft. wide, and worth over 20l. per fathom. I now propose to start a rise in the back of the 60 in a lode worth 20l. per fathom. The 72, driving west, the lode is 3 ft. wide, and worth about 7l. fathom. The rise in the back of the 72 west, about 17 fms. behind the western end, is up about 8 fms.; lode 3 ft. wide, producing a little tin and rich stones of copper ore. We have cut a trip plat at the 72. I now propose to put in a tramroad at this level east of shaft. I also propose to drive a cross-cut at the 60 south of engine-shaft. We shall intersect the lode about 30 fms. above the 72 on the course of the lode; this will ventilate the upper levels, and be very much more convenient to bring away the stuff there than it will be to bring it down on the course of the lode to the 72. We have commenced to take out the ground for a 16-ft. water-wheel to drive the 15 heads of stamps, as proposed at the last meeting. I now propose to push on this work with all speed, together with the necessary dressing and burning appliances. Gentlemen, I am happy to inform you that the mine has exceeded my expectations. In the last 16 weeks we have sold over 1000l. worth of tin from the very limited stamping power of nine heads of stamps.—WM. VIVIAN.

The CHAIRMAN said an influential shareholder had expressed a wish that an independent agent should be called in to give his opinion respecting the stamps, not that the gentleman in question for a moment doubted Capt. Vivian, having the greatest confidence in him, as the committee and all the shareholders had. The agent whom the shareholder had fixed upon was in no way connected with the company, nor, as far as he knew, held one share in the company. The report of the independent agent (Captain Hodge) had been received, and agreed in every respect with that of Capt. Vivian, and he would ask Mr. Harris to read it.

Mr. HARVEY read the report of Captain Hodge, which was as follows:—

March 26.—I visited this mine to-day and went over the ground intended for the new floors in company with Capt. Vivian. The ground selected is well situated, and sufficient for all requirements for many years to come. You will require nearly all new machinery—water-stamps, biddles, frames, burning ovens, &c. The ground is now being taken out for a water-wheel 30 ft. high and 3 1/2 ft. breast, ample power to drive 16 or 20 heads. To erect this with all other appliances it will cost (say) six months, at a cost of about 1600l., including labour and all materials. I am told you have a never-failing stream of water, and in the driest time there will be enough water to dress from 20 to 30 tons of tin per hour by erecting another wheel 18 ft. high lower down the floors, the said wheel can be worked with the water that leaves the top floors. If this be so steam-power may not be required; however, this will be for after-consideration. The stream of water is of much value to the company, and when the floor is laid out the dressing will be carried on in a very economical scale. During the time you are laying down your floors sufficient tin will be returned to pay the regular working expense at the mine, and further large heaps of stuff will accumulate, and if not sold the expense of breaking, &c., will be paid for, and by the time the machinery is got to work you will have stuff enough ready for the stamps to nearly pay the laying down of floors. The mine continues to open well. Rich piles of stuff are now lying in the slides at surface, and the lode is fully as good to-day as at any former period. It looks more than probable to me that the mine will enter the dividend list before then end of the present year.—T. HODGE.

The CHAIRMAN said: Gentlemen, we have a large representative meeting to-day, perhaps the largest ever held in connection with this mine. The balance-sheet which has been read is no doubt an agreeable surprise to you, but those shareholders who took the trouble to read the detailed account of the meeting in November last will, on reflection, be somewhat prepared for the result of the past four months working. Those of you who attended the last meeting will remember that Captain Vivian distinctly told us that in his opinion we were about to reap the fruit of the large outlay which had been made on this mine, and that we were apparently just entering the rich deposit of tin ground which has made this mine famous. From that time up to the present moment the mine has continued to answer our most sanguine expectations, and you will realise the fact when I tell you that the tin credited to the 60 is as confident as driving the ends, and of a rise put up between the 72 and 60, and gentlemen who are acquainted with mining operations will understand, if they will look at the cost-sheets which are now on the table, that we must have left behind us exposed to view a large quantity of tin ground. The value of the ore is exactly the same as the value of the richest deposits of tin in Wheal Kitty were when that mine was at its best. From all this it appears we have fairly entered the rich course of tin in Wheal Kitty. Referring again to the balance-sheet, you will see that there are no arrears of calls. You will also observe that there are no liabilities due and unpaid, all the merchants' bills having been settled up to the latest date, together with the ordinary monthly cost. The balance at the bank is larger than we anticipated it would be when the last call was made, because of the productiveness of the mine. At the same time it is right to add that we have not brought so much tin to surface as we might have done, because we have not had sufficient stamping-power to return more than enough to pay cost. At our last meeting we made calculations for four months costs, but you will see that we have had five months' work instead of four, and had not that been the case our cash balance would have been, therefore heavier. Captain Vivian will tell you that it appears that the ground in the 60 is much more valuable than the ground at the 72. He will also tell you that if we work our way up (considering the extent of ground which we have between these levels and Wheal Kitty boundary) that your profits will extend over very many years, and that the ground you have will be taken away at a very cheap rate, all the cheaper for the fact of its making richer as we rise, and that it will produce results which will more than satisfy even the most sanguine. (Cheers.) I have said nothing respecting the western part of West Kitty. That is in the undivided right of the Duchy of Cornwall, who have agreed to grant a renewal of the lease which expires in November next. Here the indications are precisely similar to the indications of the 72 and 60 east about eight months ago. It is an opinion generally entertained, which Captain Vivian fully confirms, that the western part of the set will be as productive as the eastern part, where we now have our deposits of tin. If this opinion should be realised, West Kitty no doubt will be one of the most productive mines which the district has ever produced. That, gentlemen, is putting it in the very mildest form. You will be quite prepared for the announcement that additional stamping power will be immediately needed, and it is the desire of the largest shareholders that this work be proceeded with as quickly and energetically as possible. Personally, I should be willing to pay any amount of call to-day, notwithstanding my large holding, yet it will not be possible for us to spend more than a certain amount of money on the stamps during the next four months, and if we provide for that expense the most ardent of spirits should be satisfied. (Cheers.) Since our last meeting an amount of 69l. 3s. 4d. for rents due at Michaelmas has been paid under the agreement which you entered into with the vendors, and in virtue of which you are now working the property. I am glad to be reminded by our satisfactory progress that the time for the payment of the 3500l. and interest which will be due on that agreement out of our first profits is most likely now at hand. We have the very hearty and unanimous co-operation of all the lords excepting a small holder of 1-24th of the undivided right of Chytdoden. The officials entered into negotiations with him in response to his offer to sell such right for 100l. as far as the existing lease is concerned; but those negotiations, although prompted by his offer to accept 100l., have come to nothing; and the committee do not regret this result, seeing that it may be many years before that ground is required, and that they have had a legal opinion to the effect that this undivided 1-24th has not been legally revoked at all. It was never agreed, however, to be sold to this company, because we always understood that this revocation was an open question, as far as former works were concerned. The lease from Lord Falmouth, accepted by the last meeting, has been duly received and paid for. The renewal of the lease, mentioned in the circular convening the meeting, will come up for discussion, and probably settlement, to-day. But all leases previous to the final payment of the purchase-money, payable out of the first profits, will be granted subject to the fulfilment of the stipulations entered into for the purchase of the mine. I think now, gentlemen, although I may have wearyd you, that I have given you every possible information in my power. There is nothing known to the committee that you are not acquainted with. (Cheers.) We take credit to ourselves for adopting the no credit system and the no-concealment principle. To these principles the success and consolidation of this company up to the present are mainly due, and without the strict observance of such principles the committee consider no company can be said to be in a satisfactory position. (Cheers.) In conclusion, the chairman moved that the balance-sheet which had been presented, together with the reports of Captain Vivian and Captain Hodge, be received and adopted, and circulated amongst the shareholders.

Mr. CUTZEN seconded the resolution.

The CHAIRMAN: If any gentleman has any question to ask, or any observation to make, I shall be happy to hear him.

Mr. PAYNE said he thought the reports were very satisfactory, honest, and straightforward. (Hear, hear.)

Mr. F. G. LANE said this was the first time he had seen in a Cost-book company a charge of 2500l. for leases. He thought all the costs and expenses should be paid every three months; and, seeing that all the current expenses were being paid so regularly, he thought it was a pity that some arrangement could not be made to pay off that sum. He disliked a sum owing by the company, especially in the position in which this company was, because they were not far off paying a dividend, and he certainly thought some arrangement should be made by which the lease should be in the possession of the company. It seemed that the company had no leases, but only an agreement for them.

The CHAIRMAN: You are working under the agreement for the assignment of leases on certain conditions; 3500l., with interest, is every penny the vendors receive. Every penny called up has been spent on the mine.

Mr. PAYNE: Where are the leases?—The CHAIRMAN said they were in the office.

Mr. LANE said he had pleasure in supporting the adoption of the accounts. He recently became a large shareholder, having previously been identified with the property for some time. Thinking it right to have an independent opinion he had sent his agent from Wheal Grenville, asking him to inspect the property, and he was very much astonished to receive that report. The report was very different to what he had calculated upon after reading the somewhat meagre reports from the mine. There were a large number of shares on the market, and it was on the report of his agent that he accepted the shares, and if the gentleman who sold the shares knew the nature of the report perhaps he might think that he had the worst of the bargain. (Cheers and laughter.)

The CHAIRMAN: Why did not he enquire at the office of the company?

Mr. LANE went on to say that the 72 fm. level was reported as of a certain value, and no doubt that was correct, but the rise put up from the 70 to the 60 had produced a very large quantity of tin, as would be seen by the returns which had been made. But the reports did not give the full value of the rise. The 60 was also entering a fine piece of ground, from which fine returns must be made, as not one bit of ground had been stope either at the back of the 60 or at the 70, without calculating the rise. If the rise had been carried 12 fms. instead of its being valued at 20l. or 30l. it would be worth more like 70l. per fm. The company was entering upon a better position than it had ever held before. They had only nine heads of stamps to produce the weekly returns. These nine stamps could only stamp the best portion of the tin, and he should like to know what had been done with the second quality of tin stones, and whether it had been kept in reserve?—Capt. VIVIAN said they had now 30 tons of stuff on the mine up stamped. It had all been stamped off as it came to surface, with the exception of 30 tons.

Mr. LANE said they had, therefore, 30 tons in reserve. They only got the best of the picked ore from the quantity which was being raised. He believed it had been a question with Mr. Reynolds whether they would have steam or water stamps. Capt. Hodges went there a second time to consult with Capt. VIVIAN as to whether it would be possible to have water-stamps instead of steam-stamps, and from the report received to-day he found they could have water-stamps, which would be a great saving. During the erection of the steam-stamps these eight or nine stamps could treat the best of the tin, and the seconds could be put aside for the purpose of being stamped when the extra machinery was erected. It was calculated that the extra stamps would return 20 or 30 tons of tin per month, which would give 7000l. in returns. If so the position of the company was one of which the shareholders should be proud, not only as regarded the appearance of the mine, but also as regarded the finances. The Chairman had referred to the making of a call at that meeting. He (the speaker) was ready to respond to it. There was nothing like being out of debt. (Cheers.) If he could see the 3500l. paid off nothing would please him more, and he should feel inclined to take his share in the company, but he did not like increasing his interest in a company which was in debt. If the shareholders failed they might be in a predicament as to how it was to be paid. He should like to see the debt promptly met, and whatever call was made he should be happy to respond to it. (Cheers.)

Capt. VIVIAN said he did not know that he could tell shareholders much more than was stated in the report, and what was stated in Capt. Hodges' report. The mine had opened up beyond his expectations. They were going to put up 16 more heads of stamps, which with the present 9 heads would make 25 heads. He thought that would be a fine success for the present. Whilst they were erecting stamps they would see how the mine opened up in the next six months. If the mine opened up as it was now doing they must take further steps, but that must be a matter for further consideration. He pointed this out to Captain Hodges, who quite agreed with him. They had had a rich course of tin at the 60 for the last two months. Of course, if all that tin ground turned out like that, instead of 20 tons they might have 40 tons, but he scarcely thought that they could anticipate that the ground between the present end and Wheal Kitty would turn out all so rich as that. If it did it would turn out a fortune to all concerned.

The CHAIRMAN: State your reasons for sending moderate monthly reports.

Captain VIVIAN said it was true they had an extra quantity of tin, but he did not believe in putting it up to 60l. per fathom one week and down to 20l. per fathom the next. He liked regularity, and he had always endeavoured to be moderate in all his reports.

Mr. LANE asked what had been the highest value placed on the lode in the rise?

Captain VIVIAN: I valued it at 40l. per fathom some time before I hauled the rise, and this I stated in the weekly report.

Mr. F. W. MITCHELL said he had not been expected to come upon such a good discovery unexpectedly, and he thought Capt. VIVIAN was quite right in keeping his weekly reports moderate. In Cornwall they did not attach so much importance to reports as to returns. He pointed out that in a mine like this, where the lode varied in value from time to time, and, therefore, Capt. VIVIAN was quite right in drawing a medium line. It was frequently and generally done in Cornish mines, for this reason—that people not exactly acquainted with Cornish mines did not understand the ups and downs, and got alarmed if they found a falling off. Therefore it was better to give a fair average. In Wheal Pevor Capt. White had had a lode which was sometimes worth 150l. per fathom, but he had not valued it at more than half, knowing the lode would not continue so rich for any length of time.

Mr. PAYNE said he was glad Mr. LANE had asked the questions he had done, as they had elicited very satisfactory information. He thoroughly agreed with Capt. VIVIAN that it was better to put a moderate value on the lode than an excessive value. He did not like the debt on the mine. He would rather a call was made to entirely wipe off the debt.

The CHAIRMAN: With respect to the so-called debt of 3500l. I am trustee for the vendors. I shall have to receive the money out of the first profits and hand it to those gentlemen, who have been connected—some of them—for the last 15 years with the company. It is not possible to alter that arrangement.

Mr. LANE: Do you intend to make any level above the 60?—Capt. VIVIAN said he intended to drive a cross cut out of the 60 fm. level, south of the shaft, and intersect the lode. He also intended to intersect the lode 30 fms. above the 72 fm. level. By the time the stamps were ready the cross-cut would be in and cutting the lead. This would enable them to continue to go up, and by sinking a winze they would ventilate the mine. In six or eight months they would have three or four levels.

A SHAREHOLDER asked when it would intersect the boundary level?

Captain VIVIAN said in about seven more levels. They had very many years' work before them. (Cheers.)

In reply to a further question, Captain VIVIAN said that in Wheal Kitty they had driven some of the ends up to the boundary line.

Mr. MITCHELL said he should be happy to make a call to pay off the debt alluded to, but there seemed to be a difficulty about it.

Mr. PAYNE: How long will it take to drive to Wheal Kitty?

Captain VIVIAN: Twelve or fifteen years, but we hope to have as good a mine in the western as in the eastern ground.

Mr. G. BUNN said he had been connected with the mine more than ten years, and was now a member of the present committee of management. He was no mining speculator, but his investment was a permanent one. He had always taken his fair proportion of shares, and had never sold a share, and with the exception of the additional allotment, he had never bought any. He intended to increase his holding but for unfortunate circumstances over which he had no control. His confidence in the mine was greater than ever before. (Cheers.) As regards the debt, he sympathized with the observations which had been made; he admitted the debt, but at present he did not see any way by which the suggestion of Mr. LANE could be carried out. There was one point in the report to which he would allude, which seemed to have escaped the notice of the shareholders, and that was that one party claimed 1-24th interest in the production of one portion of the mine. It was stated by a respectable legal authority that the gentleman had no claim, but, even if that were so, he (Mr. Bunn) would rather give him a reasonable sum to settle the matter.

The resolution for the adoption of the report and accounts was then put and carried.

Mr. COUZENS said he had much pleasure in rising to move the following resolution:—"That the shareholders desire to express the satisfaction and pleasure with which they have heard that Mr. J. B. Reynolds and Capt. W. VIVIAN have become the owners of the freehold of the Brehannack tenement, and are prepared to grant a renewal of the company's lease on advantageous terms, and that to mark the shareholders' appreciation it is hereby resolved that Capt. VIVIAN be appointed the mine manager at a salary of not less than 8l. per month, during the continuance of the renewed lease, or as long as he may be able and willing to perform the duties of the office, and that the business of the company be during the same period transacted at Mr. Reynolds' office in London, and a salary of not less than 5l. 5s. per month be paid for secretarial duties, and that Mr. F. W. MITCHELL be appointed local purser, at a salary of not less than 3l. 3s. per month. And that, subject to the approval of the company's solicitors, clauses be introduced into the new lease to secure and give effect to these arrangements." He went on to say that he had great confidence in the mine and in Capt. VIVIAN, and he had great pleasure in expressing that confidence publicly. He believed that Capt. VIVIAN was the right man in the right place. As regards the London management, the shareholders would, he was sure, agree with him that there again they had the right man in the right place. He was sure the management generally must have given the most perfect satisfaction to all the shareholders. He might also mention that he knew Mr. MITCHELL (the purser) in connection with Wheal Pevor, and he had the same confidence in him as the other gentlemen. He must also not omit to mention the secretary (Mr. HARVEY), who had rendered most useful service to the company.

The CHAIRMAN, in reply to a question, said it was to his interest that the leases should be granted on the lowest possible conditions. What was fair and honourable would be done, and the whole thing would be carried out under the direction of Mr. Leary, the solicitor.

Mr. G. M. BODDY seconded the resolution, which was put and carried. Mr. G. M. BODDY then moved that a committee, consisting of Mr. Bowman, Mr. Budd, Mr. Dutton, and Mr. Mitchell, be appointed, with power to negotiate and settle the terms of the lease.—The Rev. W. M. LEXNOR seconded the resolution.

Some conversation of an unimportant character ensued relative to some details in connection with the renewed lease.

The CHAIRMAN, in reply to a question, said the rent would not be more than 40l. per year.

The resolution was then put and carried.

The CHAIRMAN said the next business would be with regard to a call. The committee would not have asked for a call unless they had required this extra stamping-power. The mine was more than paying cost, and there was a considerable amount of reserves. But they must have a considerable increase of stamp-power, on account of the productiveness of the mine. He, therefore, proposed a call of 3s. per share, payable at Williams, Williams, and Grylls, Truro, on or before April 21 next to enable the committee to purchase stamps, and carry on the necessary works in connection therewith.—Mr. BOWMAN seconded the resolution.

The CHAIRMAN: I promise you the mine shall not go a penny in debt.

Mr. LANE suggested that a 5s. call should be made, but Mr. MITCHELL and the CHAIRMAN pointed out that it was no use asking for more money than they could expend.

The resolution was then put and carried unanimously.

Mr. COUZENS proposed that the committee, consisting of Messrs. Bowman, Budd, Dutton, Mitchell, and J. B. Reynolds be re-appointed, and that the best thanks of the shareholders be presented to them for their services.

The resolution was seconded by PAYNE, supported by Mr. LANE, and carried.

Mr. DUTTON, in acknowledging the vote on the part of committee, referred to his visit to the mine last year, and said he went underground, and was exceedingly pleased and satisfied with what he saw, and he hoped before long the shareholders would be receiving good dividends.

Mr. LEARON (seconded) then laid upon the table the declaration of trust.

Mr. COUZENS proposed a cordial vote of thanks to the chairman for the efficient manner in which he had presided over the meeting, and for the valuable information he had given regarding the present position of the mine and its future prospects. (Cheers.)

Mr. BOWMAN: I beg to second that. Mr. Reynolds is always very explicit and very candid, and gives us every information he can. He conceals nothing, but tells us all he knows himself, and if he does that I think we should be satisfied. (Cheers.)

Mr. PAYNE, in supporting the motion, said he had moved many votes of thanks, but in the whole course of his life he had never got his legs so tired to support a resolution with such pleasure as he did the present motion. There was no man in the room for whom he felt greater respect and esteem, and he might say love, and he hoped they would see Mr. Reynolds in the same position for many years to come.

The motion was carried, and the CHAIRMAN having acknowledged the compliment, the meeting broke up.

UNITED VAN CONSOLS AND GLYN LEAD AND BARYTES MINING COMPANY

The adjourned general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday.—Mr. PRYSE JONES in the chair.

The usual preliminaries having been disposed of,

The CHAIRMAN detailed the steps that had been taken since the adjourned meeting. They had had many difficulties to deal with, one among them being that the directors, who were understood definitely tendered their resignation at the last meeting, subsequently declined to retire until they were relieved of responsibility and paid the amount due to them. All, however, had now been satisfactorily arranged.

In Newtown they raised 3000l. in a few hours, and with that 3000l. Mr. Talbot had himself come to London to make the necessary settlement. Mr. Thomas was paid off, not 2300l., which he originally claimed, but with 885l. in cash, and money was remitted to Llandovery to relieve the liabilities of himself, Mr. Bolton, and Mr. Clarke. None of the old directors had now any claim upon the mine, and, indeed, the company only owed the present month's working expenses. The solicitorship to the company had been changed, and although much money had been frittered away on the mine—21,000l. having been expended up to the end of last year to go down 40 yards—he was glad to say, although the present directors claimed no merit in the matter, that the mine had so materially improved that it was now worth 15,000l. or 20,000l. more than at the last meeting. This as he had said was not through his ability, but through better luck. He was at the mine on Saturday, and found everything in splendid working order. There is plenty of ground unexplored at the mine, and also much that has been explored and proved.

The question was raised as to the authority upon which Mr. Rowley Morris had analysed the accounts, and the minutes of the board meeting held immediately after the general meeting of March 2 were read, which showed that the authority was given by the board.

The CHAIRMAN then moved, and Mr. Bally seconded, the motion that the report and accounts presented at the meeting of March 2 be received and adopted.

Mr. ROWLEY MORRIS read his analysis of the accounts from 1877, justifying himself for going back to a date long before the formation of the company by stating that some of the amounts had been within the period embraced by the balance-sheet. He found the balance-sheet quite accurate, and might congratulate Mr. Cooper upon the books being kept in absolute perfection. He would also say at once that neither Mr. Bolton nor Mr. Clark had taken any of the money which had been charged. He then read a long list of items showing that there had been received, during the period his analysis referred to, from subscriptions by the shareholders, lead ore sales, and other sources, 19,240l. 10s. 5d. He explained how this had been expended, and drew special attention to the items law charges, travelling expenses, and so on, concluding by observing that there was about 2700l. which he could not by his principle of analysis account for.

The report and accounts were then unanimously adopted, and the meeting assumed a tone of uproar, confusion, and personality, from which it could not afterwards be extricated. The matters in dispute were of no interest to any but the few shareholders involved in it, and of little importance to them.

The CHAIRMAN proposed, and the motion was seconded, that the balance at the credit of revenue account be transferred to capital account, but the meeting took no further notice of the matter.

Mr. CLARK proposed that there be no addition to the present number of directors until the meeting to be held in July.

The SOLICITOR explained that the present being an adjourned meeting no fresh business could be introduced, and that such a resolution could not be put without ten days' notice.

The CHAIRMAN said that there was one vacancy at the board, caused by the resignation of Mr. Clark, received that morning.

Mr. FRANCIS proposed, and it was seconded, that Mr. Samuel Morgan, jun., a gentleman holding over 1000 shares, be elected to fill the vacancy.

Mr. BOLTON proposed, and Mr. FOLGER seconded, the re-election of Mr. Clark as a holder of twice or three as many shares as Mr. Morgan, to whom, however, the principal objection was that there were already too many local shareholders on the board.

Mr. TALBOT pointed out that the late directors had agreed to resign, and not to interfere with the management of the company if they were paid out. As they had been so paid out it was obviously a breach of faith on the part of Mr. Bolton, one of the late directors, to propose Mr. Clark, another of them.

Mr. TAYLOR proposed Mr. James Walton to fill the vacancy, but the motion was not seconded.

A DIRECTOR thought that the outside shareholders should be more largely represented at the board. About one-fourth of the shares were held in Newtown and the neighbourhood, and they had two local directors, whilst there were two other directors to represent the remaining three-fourths.

The attendance had been very good, and the shareholders got tired of the uproar and squabble, and the proceedings were ultimately brought to a close by a vote of thanks being given to the Chairman.

LAS CALDAS FREEHOLD MALACHITE COPPER MINING COMPANY (LIMITED).

The first ordinary meeting of shareholders was held at the offices of the company, Palmerston Buildings, Old Broad-street, on Monday.

Mr. J. C. BOWSER in the chair.

The MANAGER having read the notice convening the meeting,

The CHAIRMAN remarked that this was only a statutory meeting, and as the company had been in operation for little more than eight weeks he had not much to communicate, but what he had was very cheering, as would appear from the facts which he would call upon the manager, who was so thoroughly acquainted with the property, to give to the meeting.

The MANAGER said he had much pleasure in responding to the appeal of the worthy Chairman. There were three important facts in connection with the mine—fact one was, no money payment had been made for the purchase of the property, although, as he need scarcely remind them, it was a most important freehold, the whole of the subscribed capital, therefore, being left intact for the legitimate working of the company. In connection with this subject he might tell them that less than 50l. had been expended in preliminary expenses. Fact two—Although the ore was of the richest quality known, giving according to assay by the Bank of England assayers, 47 per cent. of copper, no expensive machinery of any description was needed in obtaining the mineral. Fact three—Five men working not more than five days a week for scarcely eight weeks have raised from 15 to 20 tons of ore. He had that day received a gentleman who had visited the property just before his return to this country, and he assured him that the mine would yield large profits. This statement is borne out by the above fact relative to the yield of ore. Assuming the ore obtained to be only 15 tons of 40 per cent. its value at Swansea was upwards of 3000l., and the entire costs at the mine had not exceeded 40l. Some idea would, therefore, be obtained of the large profits which will be made when the number of miners is increased to 30, as was intended. He fully believed that a minimum profit of 10,000l. a year would be realised, and he could only congratulate the present shareholders on having an interest on such moderate terms in what he felt justified in stating would be one of the best properties ever offered in this country. It should also be borne in mind that the close proximity of the mine to a railway station—little over a quarter of a mile—in direct communication with the Port of Santander enabled them to place their ore at Swansea for less than 15s. a ton carriage, or a little over the cost from Cornwall to the same port.

The CHAIRMAN said after the lucid statement of their manager, whose knowledge of the property was derived from personal obser-

vations, he had but very little to add, excepting this, that they intended issuing only a few additional shares at par, the object being to keep the capital as small as possible, so that the dividend might be in the inverse ratio. In conclusion, he begged to assure them that the board was deeply interested in making the property a great success, and with the view to extended operations being commenced at the earliest moment they had secured the services of Capt. G. Dunn, who was for five years the superintendent of the Santander Zinc Mining Company, and possessing ample knowledge of the Spanish language. He would leave for his duties on Monday or Tuesday next.

The meeting was brought to a close with the customary vote of thanks to the Chairman.

LINEARES LEAD MINING COMPANY.

The report of the directors, prepared for presentation at the meeting on Thursday next, states that the result of the past half-year's operations has been less satisfactory than that of the previous six months, but seeing that the lead market has throughout been very dull, with a downward tendency, and the sales have had to be made at lower prices, the amount of profit may be considered fairly good. The quantity of ore raised from the mines was 2075 tons, compared with 2125 tons for the half-year to June 30, showing a reduction of 50 tons, but the reserves of discovered ore in the mines remain at the quantity reported in September—5100 tons. At Warne's shaft the explorations of the lode at the 115 driving cast has developed ore estimated at an average of 3 tons per fathom. The present value of the lode at this point is 5 tons per fathom, and this gives great hope that when the level under it (the 130) is sufficiently advanced the lode will also be found rich at that depth. At Peil's shaft the levels have opened up a good quantity of ore ground during the half-year. The prospects of the Quinientos Mine are not so encouraging as they were six months ago; nevertheless, the raisings of ore have been maintained at 75 tons per month, and there seems reason to hope that a similar rate of extraction can be maintained for the present half-year.

The necessity of using a larger proportion of English coal at the Cordova Works, in consequence of a temporary failure in the supply of Spanish coal, somewhat increased the smelting charges, but this was to some extent compensated by the improved produce of the lead obtained. The transport charges between Cordova and this country have been reduced by 2s. per ton, both from Seville and Malaga; the benefit of this will be experienced during the present half-year. The balance to the credit of the profit and loss account on Dec. 31, was 3233l. 13s. 5d. Of this the directors have declared a dividend of 4s. per share, which will absorb 2399l. 12s., and placed to the reserved fund 150l.; leaving a balance of 234l. 1s. 5d. to carry forward.

ALAMILLOS COMPANY.

The report of the directors prepared for presentation at the meeting on Thursday next states that the accounts now presented show a profit of 1258l. 6s. 1d.; this is less by 793l. 0s. 6d. than the profit of the previous half-year. The reduction is mainly attributable to the fall which has occurred in the price of lead. The quantity of ore raised was—during the 6 months to the end of June, 1432 tons, and during the 6 months to the end of December, 1429 tons, showing a decrease of 3 tons. This reduction arose from the falling off in the production of tributaries' ore, caused by an unusually wet season, but as a set-off the mine costs were considerably lessened, being 10,418l. 8s. 3d., and 9,250l. 10s. 1d. respectively, and showing a reduction of 1167l. 18s. 2d.

In September last the directors reported to the shareholders that the mining prospects had improved. The improvement then reported has since been sustained. Taylor's shaft has now reached a depth of 130 fms.; a level has been driven east and west of the shaft at that point, and has opened up good ore ground in each direction. The keen competition of ore which has prevailed in the Linarès district for lead ore has rendered it difficult to buy at such a price as would leave a profit on smelting. As soon as a favourable opportunity offers the directors will resume purchases. The smelting of the ore and the carriage of lead to the ports have been conducted with regularity, and some reduction has been made in the transport charges.

The balance-sheet shows that the amount standing to the credit of the profit and loss account on June 30 was 1403l. 10s. 3d. Out of this a dividend of 9d. per share has been declared, payable on March 26, absorbing 1312l. 10s.; and leaving a balance of 91l. 0s. 3d. to carry forward.

FORTUNA COMPANY.

The report of the directors prepared for presentation at the meeting on Thursday next states that the accounts show that the profit on the six months was 2251l. 11s. 10d. This is much less than the profit made during the previous six months, when the company had the advantage of lead contracts made in the early part of that year at comparatively good prices; but the mines during the half-year have well maintained their productiveness, and at the new properties acquired the prospects are very encouraging. The extraction of ore shows an increase of 58 tons compared with the preceding six months, and at the same time the reserves of ore in the old mines have been maintained at 8500 tons. The mining expenditure was heavier than during the half-year to June 30 to the extent of 1162l. 19s. 3d. It has been the policy of the directors to have the levels extended vigorously, and at the same time to maintain the machinery in a state of efficiency. Some extra charges were occasioned by the floods which prevailed during a portion of the half-year, but the machinery is so good and substantial as to be fully equal to cope with the water.

At the new mines, San Anton and San Francisco, considerable progress has been made since the last general meeting. At the former the engine-shaft will soon reach a depth of 55 fms., and the lode be there intersected. Some of the upper levels have opened out productive ore ground, so that about 40 tons of ore per month are now being raised from this mine, and already the reserves of ore are estimated at 300 tons. This mine, as is shown by Mr. Tonkin's report, is now self-supporting. At the San Francisco Mine the engine was set to work in October last, and the shaft has since been completed to a depth of 40 fms., and a level will now be commenced east and west from this point. The lode in the shaft is worth 1 ton per fathom.

The balance-sheet shows that there remained unexpended on Dec. 31 last of the fund for working the new mines 1100l. 19s. 10d.; and to provide for carrying on the operations at San Francisco Mine to the period of the next general meeting, the directors estimate that a further sum of 750l. will be required. A resolution to vote this sum from the reserved fund will be submitted at the meeting. The price of lead continues very unsatisfactory, and has varied during the past half-year from 16l. 5s. to 14l. 15s. per ton. The audited accounts show that the balance at the credit of the profit and loss account at end of December was 2322l. 13s. 5d. Out of this a dividend of 1s. 9d. per share has been declared, payable on March 25, 2137l. 10s., and 109l. 7s. 6d. placed to reserve fund; leaving a balance of 95l. 15s. 11d. to be carried forward.

WHEAL BASSET.—At the meeting on Tuesday the accounts for 32 weeks working showed a loss of 5128l. 17s. 4d., and a debit balance of 5257l. 18s. 11d. A call of 16s. per share was made, payable 10s. on May 1 and 6s. on June 1. It was resolved that the committee be and are hereby empowered to dispose of the 72 shares standing in the forfeited share account of this mine at such time and on such terms as the committee may deem advisable.

ANNEALING POTS FOR USE IN TIN WORKS.—In order to prevent the extreme contraction and expansion caused by the action of heat from injuriously affecting the annealing pot Mr. SILAS WILLIAMS, of Llandaff, casts the lid of the latter separately from the case, and when desired to form the joint he does so by means of fire-clay, and bolts the lid to the case by any suitable number of bolts, thereby securing the two together in a perfectly air-tight manner. The interior of the said lid is provided with a series of brackets or ribs for the purpose of supporting the same, and preventing it from cracking when under the action of heat. A band is placed round the pot or case to prevent the same from "buckling" and collapsing. The apparatus above described is by preference constructed of cast-iron.

SMOKE AND STEAM UNDER THE MICROSCOPE.—If one places under a microscope magnifying to 100 times in a preparation glass for fluids for microscopical research the smoke of paper, wood, or cigar, &c., and illuminates it from above by means of sun or electric light concentrated by lens, one observes small particles of smoke in rapid and apparently oscillating motion. These particles push against each other and the glass partition, rebound, set themselves fast upon the glass, and disappear after some time, leaving behind a small spot on the glass; they are of spherical form, by reflected light light grey on a pale dark ground, and appearing in consequence of radiation much larger than by illumination from beneath by a mirror, consequently in transmitted light, where they appear as extremely small, scarcely perceptible, black spots. The approximate diameter of these particles is from 0.0002 to 0.0003 millimetres. If one places upon the glass a drop of hydrochloric or nitric acid, and brings in contact with it a glass rod dipped in ammonia, there issues forth a white vapour of the resulting salt, which if covered by a glass plate presents under the microscope a similar appearance. In this way Mr. Bodasewsky has investigated the smoke of several bodies, and perceived a similar motion of the particles. Vapour of nitric acid, sulphuric acid, phosphoric acid, sulphur smoke, &c., produced under the microscope by means of a glowing platinum wire, consist also of similar visibly moving particles; they are not perceptible with steam, and one sees only a thin moving glimmer. At sight of these independent motions of the vapour and smoke particles one cannot forbear perceiving in them an approximate representation of the hypothetical motion of glass molecules, according to the kinetic gas theory.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. CLXXII.*

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GENERAL THEORY OF PISTON VENTILATORS.

In consequence of the frictional and other resistances of the air in passing through the ventilator it is found in practice that when designing ventilators the water gauge reading which it is desired to produce should be increased 50 per cent. when making the calculations for the dimensions of the ventilator. Hence also the tangent of the angles of inclination of the inner ends of the blades of ventilator and delivery guides must be reduced 33 per cent. The number of blades should be sufficient for the guiding the air through the ventilator.

The best known screw ventilators for ventilating mines are those of Lesoinne, Motte, Duvaine, and Pasquet.

Lesoinne's ventilator, erected at the Grand Bac, Val Benoits, at the Anthony Pits of the Caroline Collieries, Witkowitz, and other collieries, possess six screw blades, made of sheet iron, 1-16th inch thick, which are rivetted to wrought iron arms. The arms are attached at the outer ends to an iron ring, and at the centre to a boss. The sides of the blades not attached to the radial arms are connected at the outer end with the iron ring by means of bolts. The annular iron ring is also attached by tie rods to a second boss on the ventilator axle. The angle of inclination of the screw blades are 6 to 7 degrees at the centre and 18 to 19 degrees at the circumference. The axis of the ventilator at the Grand Bac Colliery is placed horizontally, so that the ventilator is incased in a circular opening placed at one side from the shaft, and is driven by belting from the engine. At the Val Benoits Colliery the axis of the ventilator is placed vertically over the mouth of the shaft, and is driven through the intervention of bevil gearing.

The diameter of the ventilator at the Grand Bac Colliery is 8 ft. 8 in., and the diameter of the centre is 1 ft. The theoretical amount of air passed by the ventilator is 24,000 cubic feet per minute, with 170 revolutions per minute. The actual quantity passed is 17,000 cubic feet per minute, so that the per centage wind effect of the ventilator is 70. The water gauge reading, however, was only 0.20 in. The useful effect of the ventilator is 25.5 per cent. The ventilator at the Val Benoits was 9 ft. diameter, made 200 revolutions per minute, delivered 29,000 cubic feet of air, with a water gauge reading of 0.51 in. The useful effect is given at 26 per cent.

Motte's screw ventilator, erected at the Monceau Fontaine Colliery, near Charleroi, consists of a double threaded screw ventilator, the two blades making each one complete revolution, so that the length of the ventilator is equal to the pitch of the screws. The ventilator is fixed in a cylindrical casing, fitted into a side wall close to the mouth of the shaft. The ventilator was driven first by leather belting, and afterwards by rope belting, from a vertical steam engine. The ventilator was 31.5 inches in diameter, and 31.5 inches long, the pitch of the screw blades being also 31.5 inches. The number of revolutions amounted to from 600 to 750 per minute, and the amount of air from 3800 to 4600 cubic feet per minute, with a water gauge depression of 0.25 inches. Another of Motte's ventilators, at the Sauvartan-Sur-Dour Colliery 4 ft. 7 in. diameter, and one-half the pitch in length, with two blades (double threaded), at 450 to 500 revolutions per minute, gave 8300 to 8500 cubic feet per minute with a water gauge depression of 0.80 to 1 inch. The useful effect of these ventilators does not seem to amount to more than 20 to 21 per cent.

The principal feature of Duvaine's ventilator lies in the shape of the screw blades. The surface of revolution described by the blades is that of a truncated cone, the angle at the base of the cone being 45°. The centre of the ventilator consists of a cast iron cylinder, the blades of wood are carved to the same surface as that of one side of the threads of an ordinary screw. The ventilator is placed sideways close to the mouth of the shaft. There are four blades, and each is continued for a little over one-fourth of the pitch, so that they completely cover the circle described by the ends of the blades. The blades are connected by means of angle iron to a circular iron ring or rim, and strengthened by radial ties. The pitch of the screw blades is 40 inches, and the outside diameter of the ventilator is 8 ft. 4 in. The area is the annular space between the outside of the ventilator and the cast iron centre is 140 square feet. At from 300 to 500 revolutions per minute, and 1.36 and 3.25 inches water gauge depression, the amount of air passed through the ventilator per minute is 13,000 and 22,000 cubic feet respectively. The useful effect is given at 26 to 32 per cent.

Pasquet's ventilator, which does not seem to possess any special differences of construction, is said to give 28 to 35 per cent. of useful effect, with 300 revolutions per minute, and 1.2 to 1.7 inches water gauge depression.

The useful effect of screw ventilators is comparatively small, and diminishes rapidly with an increase of the water gauge depression; hence they have hitherto been used chiefly as auxiliaries to natural ventilation.

ROTATORY VENTILATORS.

This last description is meant to include all ventilators having a rotatory motion, but in which centrifugal force does not come into play for exhausting the air. This description of ventilator has been called by the Germans rotatory piston ventilators, but, unlike the ordinary piston ventilators, have no valves.

FABRY'S VENTILATOR.—This is perhaps the oldest and best known of rotatory ventilators. The inventor states that his first idea was for a pair of toothed wheels of equal size, each with eight teeth, which geared with one another. If we imagine a pair of such wheels enclosed on two sides by vertical walls, or side plates of iron, which fit so close against the sides of the wheels as to be practically airtight, and suppose also the two outer circumferences of the wheels to be enclosed by some cylindrical walls attached to the vertical sides above mentioned, in such a manner as to fit practically airtight against the top of the teeth, and that the space thus left open in the bottom of the casing is connected with the upcast shaft, whilst the opening of the upper side is free to the atmosphere; then if the wheels rotate in such a manner that the sides of the wheels in contact move downwards air will be exhausted from the shaft, and delivered from the circumferences (which are moving upwards) into the atmosphere. The amount of air exhausted per revolution is equal to the sum of the spaces contained between the teeth. A certain amount of air is, however, drawn in, being equal to the space between the top of each tooth and the flanks of the teeth with which it gears, multiplied by twice the number of teeth in one wheel. The net amount of air exhausted per revolution is, therefore, equal to the difference of these two quantities. This amount of air will be so much the greater the greater the radial length of the teeth. The amount of air brought back can be reduced to a minimum by making the length of the tooth above the pitch line as nearly equal to the length below the pitch line as is possible in practice. The amount of air is independent of the form of the flanks of the teeth, for if we suppose any part of the flank which does not come into working contact to be recessed so as to enclose a larger space, and therefore a larger amount of air delivered into the atmosphere, an equal larger amount of air will be returned back.

Fabry's ventilator is usually constructed with three teeth or arms; in some recent constructions, however, the number of arms has been reduced to two. In the first constructions the apparatus was made by attaching to each end of the two shafts cast iron end pieces formed to the contour of the wheels. The end pieces are connected by sheet iron of the breadth of the wheel, and bent to the contour of the wheel. The rubbing surfaces, however, are made of wooden lagging, and formed epicycloidal, as in the case of the wheels. The

epicycloidal surfaces, however, are not continued quite to the full extent of what would be the rubbing surfaces, but end slightly concave, in order to avoid the shocks which might be occasioned by the sudden closing of the teeth upon each other. The rubbing surfaces of the teeth and of the vertical sides of the end pieces, which come in contact with the sides of the casing, are covered with leather, in order to ensure a more perfect fit, and thus avoid loss of air. The casing was made of sheet-iron.

In the latter and more usual construction the cast-iron end discs or pieces are replaced by a central cast-iron boss with three radial arms, the latter having cross pieces at about two-thirds the length from the axle. The boss, three arms, and cross piece, are all cast in one, the arms being provided with ribs on the back side of the arm—i.e., on the side opposite to that in which rotation takes place. The cross pieces are strengthened by ribs on the outer side. Boards about 1 in. thick are fastened on the flanges parallel to the axis, and stretch from the casting at one end of the axle to the casting at the other end. It will be understood that the two castings are keyed on the shaft in exactly the same position, so that each arm of the one casting is parallel to an arm of the other casting. The ends of the cross pieces terminate in short curves (epicycloidal), which are likewise covered by wood stretching to the corresponding epicycloidal curve on the other casting. As the outer surfaces of the wood coverings are the parts which must fit most close without actually touching, it is necessary that they be formed perfectly epicycloidal in shape, whilst the curved flanges to which they are attached may be described as arcs of a circle. A tighter fit might be procured by covering the wood with indiarubber, which would allow of the surfaces actually touching. These wheels rotate below the axle in a casing, the surface of which form parts of two cylinders, with the centre line of the axle as their axis. The cylindrical surfaces are not, however, continued till they meet, but leave an open space between, which is connected by means of a culvert with the top of the upcast shaft. From the top of the masonry the casing is continued to about 30 degrees above the level of the centre of the axle in iron. The ends of the arms must rotate as close as possible without actually touching the inside of the casing. To accomplish this the inside of the casing is covered with a layer of cement after the axles with the arms keyed on have been fitted in their places, and the surface of the cement is struck with a template attached to the arms. It is advisable to form the vertical sides of the casing in a similar manner. A tighter fit might be obtained by attaching flat strips of indiarubber or leather, which should project so far as to be in actual contact with the cylindrical and vertical sides of the casing. The wind effect, which in the case of already constructed Fabry's ventilators is 70 per cent., might thus be increased to 85 per cent. In case of the ordinary construction with three arms, the cylindrical portions of the casing should each extend more than 120 degrees, in order that the culvert from the upcast shaft shall always be cut off from direct communication with the atmosphere.

FOREIGN MINING AND METALLURGY.

The favourable tone of the French iron trade has reacted on Belgian metallurgical industry. The demand for iron appears to have revived or improved to some extent, and offers have been made on various sides. Quotations have not been very high, and have been shaken rather than otherwise, but from the moment that new orders of any importance present themselves they will become stronger. A contract has been entered into for the purchase of 640 tons of old Vignoles rails from the Belgian State Railways, M. Strybos, of Antwerp, being the purchaser at 37. 4s. 9d. per ton; his only competitor, Mr. Moss, of London, offered 37. 3s. 2d. per ton. English pig, delivered at Antwerp, has brought 27. 6s. 6d. per ton. Plates have been in fair demand at 67. 16s., and even 77. 4s. per ton; boiler-plates have made about 87. per ton. The Belgian construction workshops continue fairly employed. The French Government has just ordered 30 steel cannon from the Firminy Works.

The Belgian coal trade has shown little change. Transactions have been rather scarce as regards some products, but there has been a good current of orders in other directions. In the Borinage affairs are moving on well, especially for industrial coal. As regards domestic qualities of coal the season has, of course, practically terminated. Some business has been passing in coal for brick-making purposes, but not at very high rates. The iron trade continues to absorb rather considerable quantities of coal. The intelligence received from the German coal market has been rather scanty. Domestic qualities have been in little demand, even in the northern provinces. Industrial coal has been sought after in Westphalia and the Rhenish provinces, but in Upper Silesia the demand has sensibly declined, and prices have shown a certain weakness. In this last-mentioned district the coal trade leaves a good deal to be desired, and a reduction of 3s. per truck is talked of. Deliveries have not been very active on the Ruhr. At Saarbrück the production has revived to some extent, but it is still sensibly below the level at which it stood at the corresponding date of last year.

In the French department of the Haute Marne the tone of the iron trade is generally good. Although current affairs present only a small importance as compared with previously concluded contracts, there is still a stream of rather pressing orders. Iron has remained without change. Iron wire has been in considerable demand. English pig, No. 3, sells at 37. 11s. to 37. 16s. per ton. There is scarcely any change to report in the tone of business in the Longwy group. In the Nord producers have maintained a firm tone, and orders have been somewhat more sustained. Iron in bars has brought 77. 16s. to 87. per ton. The steelworks have their production engaged for some time to come, and some of them cannot undertake any new orders before 1883. In the German iron trade business has been somewhat quieter, especially in the Westphalian district. Casting pig has been in little demand upon the German markets, and it has been the same with iron, as well as Bessemer pig, spiegel, and rails.

ZARUMA GOLD MINES.—La Macion de Guayaquil, Ecuador, states that under the title of the Gold Mining Company of Zaruma, there has been formed by a few capitalists in London a company with a capital of 250,000£., to work the old and well-known mines of the same name. A meeting of the proprietors of the mines has been held in Guayaquil, and the conditions proposed were unanimously accepted, and the arrangement for paying the proprietors entirely in shares of the new company was received with much pleasure, so much is the confidence of all concerned in the richness of the mines of Zaruma, although so little has been done with them hitherto owing to want of money, for it is not doubted that the value of this mine, and under the Republic, will reach the same important figure as was once occupied by this mine, the Sesmo, and others in colonial times. Hearty congratulations are offered to the new Zaruma Company.

FOREIGN MINES.

TOLIMA.—The advices received by the mail on March 26 state that the Fria January returns gave a profit of 2717. 19s. 6d.—The underground agent reports 263 ft. 10 in. of ground expended, of which 75 ft. 10 in. were unproductive, leaving 188 ft. of productive ground. The superintendent, whilst observing that the month's yield is composed of ore richer by 10 ozs. per ton than the preceding month, states that the appearances and prospects are satisfactory throughout the mine in respect of the sections in work or development. He adds, "the ends in the main drives are more generally productive in point of number than I remember to have seen them, and whilst our engine shaft is advancing towards deeper levels, on a productive lode, our higher levels especially in the 50 and 60 are opening up good stopping ground."

UNITED MEXICAN.—Advices received from Mr. Edward Hay, dated Guatemala, Feb. 21: Mine of San Cayetano de la Ovejera: From the contratiello of La Fortuna a small lot of good ley has been introduced at Duran last week, being the produce of the narrow strip of ore we have been following up. We have had more ore this week from San Lucas, with leys of the same class as hitherto, so that in this place, like in La Fortuna, the bucones continue their researches, as it would not pay the company to work these points. In the canon, or gallery, north-west a very great improvement has taken place since my last report. The quantity of ore thrown down was increased and the leys on an average are better than they have been hitherto. I have also received 5 arrabes (125 lbs.) of bonito (rich ore), which, according to an assay taken out of the mine, contains 230.40 mares of silver (mare 8 ozs.) per monton (3200 lbs.), worth 6 grs. of gold per marc. I expect some more in a few days, when both the ley and the bonito, therefore, be able to credit the mine with the value thereof in this month, in which the extraction of the bonito has taken place. We have opened a frente, Los Reyes, to the north north-west on the lode, starting from the first platform in the contratiello of the canon north-west. On the 17th a reliz (wall of the lode) came across the frente of Los Reyes; and, though for the moment the ore disappeared, they have followed a strip of it to the alto, which, according to latest news, is widening.

In the contratiello more ore has been found to the bajo; the men say it is a parallel cuerpo (lode), but our engineer does not believe this to be the case. However, as the ore is good we began at once to drive cross cut fashion to discover the lower wall. The width of the two cuerpos is now 2.55 metres in ore and we have not yet reached the lower reliz. The ventilation is bad, as this end is far ahead of all the other workings, and, moreover, the rise increases the deposit of foul air. Steps have already been taken to remedy this evil, but a new communication is to be made. San Daniel is at a higher level than the Cuerpo de Ramos. This latter point was communicated some time ago with the canon north-west, and now by the direction of the engineer the work will be carried on faster. Last week's mine outlay amounted to \$704, but the value of the ore extracted covered the outlay.—Mine of San Antonio de la Ovejera: In the cross-cut of San Juan we have cut a vein; inclination to the south-east, but at present without silver.

SANTA BARBARA GOLD.—W. H. Richards, Pari, Feb. 14: During January 1155 tons of mineral were stamped, yielding a produce of 3321 oits. of gold, or equivalent to an average of 2.964 oits. per ton of stone stamped. Of the stone stamped some 274 tons treated at the No. 4 stamps were of inferior quality, which had reduced the general average yield of the ore for the month. This produce of 3321 oits. of gold, valued at 8s. 6d. per oit., amounts to 14117. 8s. 6d.; and the estimated working cost for the month, at exchange 225s., being 1326. 7s., leaves an estimated profit of 522. 1s. 6d. for January. The cost-sheet for January included the expense of completing and fixing a new set of launders, 330 ft. in length, 3 ft. wide, and 1 ft. deep, on the existing water-courses, a large force of men having been employed on this work. In addition to the above mine working cost, the sum of 4957. 7s. 11d. was estimated as expended on capital account during January, in respect of the construction of the new water-course, new hauling machinery, and additional house accommodation. Mr. Richards reports that the No. 1 shaft had been sunk 2 ft. 6 in. during the month; the lode in the south end of the shaft being somewhat contracted, 8 ft. wide, while at the north end it was 10 ft. wide, the upper part of the lode in general being of No. 3 stopes, south of No. 1 shaft, the lode was 10 ft. wide, but more intermixed with hornblende than usual between the two shafts, and the ore was consequently of inferior quality. At stope No. 8, north of No. 1 shaft, the lode was 12 ft. wide, but it did not present such a favourable appearance as usual north of the shaft, it being more intermixed with quartz, and the pyrites of a yellower and lighter description than is found between shafts Nos. 1 and 2. Mr. Richards adds regarding this unfavourable alteration in the lode:—"The change may only be temporary, and we trust that we may soon be getting mineral of a far better quality from this part of the mine, but it is a rather singular coincidence that a similar falling off in the produce occurred exactly twelve months since, and continued for some three or four months." The mine captain's report give the state of the lode in the other sections of the mine.—New Watercourse: Mr. Richards reports—"Great progress has been made on this during this month in spite of the heavy rains which have fallen. There has been a force of 120 men on the works, and the average attendance was 75; the following work has been performed:—Channel cut in rock 24 metres, rock blasted in platform 170 metres, channel excavated 140 metres, and excavated for platform 6303 metres, making a total of 6537 cubic metres excavated. The mine captain reports that the quantity of ore raised during the month amounted to 1495 tons, of which 351 tons were rejected at the spalling floors as refuse stone, and 1144 tons, together with 11 tons remaining unstamped at Dec. 31, in all 1155 tons, treated at the stamping-mills, leaving 23 tons unstamped on Jan. 31. The average quantity of ore raised per toner for the month amounted to 54.33 wagon loads, and the number of holes bored per man for the month, 57.42.

COPIAPO.—Thos. B. Hall, Feb. 12: Dulcinea Mine: The influx of water from the 160 has entirely prevented us from sinking Fletcher's shaft during the past month, but as the water is decreasing very considerably we hope to commence sinking about the beginning of next month, when this work will be urged on as fast as possible. The shaftmen, however, have not been idle; they are engaged stripping down a lode that we have discovered inside of the footwall of our shaft, which we find to be 2½ ft. wide, and will yield 2 tons of good ore per fathom; the ground or "horse" standing between the lodes varies from a few inches to several feet in breadth. The 130 driving north is set to two men, at \$25 per metre; the lode is 4 ft. wide, and yields 3 tons of ore per fathom. The 180 to drive south is set to two men, at \$20 per metre; the lode is 3 ft. wide, and yields 3 tons of ore per fathom. The cross-cut driven east in the 180 north for the reception of the water tank has been concluded. The 130 to drive north in the bottom of the winze sunk from the 170 south is set to two men, at \$20 per metre; the lode is 3½ ft. wide, and yields 4 tons of ore per fathom. The 170 to drive north is set to two men, at \$30 per metre; the lode in this end looked very promising for a short time during the past month, once yielding at the rate of 1 ton of ore per fathom, but at present it is quite poor, and we think it advisable to cross-cut east in this level to cut the footwall lode, as we have a very good lode in the northern end of the stope. The 170 south is set to two men, at \$23 per metre; there has been a considerable falling off at this point on the part of the lode we are following—producing now 2 tons of ore per fathom, but I still hope we have another lode in the footwall of this level from the appearance of the fine lode we cut a few metres back from our present end. The cross-cut set to drive east in the 160 north is set to one man, at \$10 per metre; we have struck into a lode at this point, which I suppose is the one we are in search after; it looks very kindly—producing some stones of ore. The man will continue driving in the same direction until he has cut right through the lode. In the 160 south we are not doing anything on account of water. The 150 to drive north is set to one man, at \$20 per metre; the lode is 3 ft. wide, and yields 2½ tons of ore per fath. The 140 to drive north, set to one man, at \$12 per metre; the lode produces some very good stones of ore, but not sufficient to value. A chiflon to sink below the 140 north, set to one man, at \$10 per metre; the lode is 2 ft. wide, and yields 2 tons of ore per fathom. A chiflon to sink below the 140 south set to one man, at \$10 per metre; the lode is poor. The cross-cut driven in the 60 has been communicated to the engine-room, and the men are put to take out the ground south of shaft, in the same level, for the proposed new engine. The level driving south at the bottom of the chiflon from surface, towards Holland's shaft, is set to two men, at \$20 per metre; the lode is poor. Good progress is being made in the contract shaft, the miners having sunk 6 metres during the past month; the lode looks very promising, producing some very good stones of ore. We have 18 men at present stopping in the backs of the 170 north, the 160 south, and the 140 north. There are 23 tributaries working in the 130 and above. Our estimate for the cost of January month is about \$9700. The ore extracted for the same month consist of 320 tons, with an estimated percentage of about 21.

CHECO COPPER MINE.—The 40 end, on the north lode, has been driven during the past month 2.15 metres; the lode is looking very promising, yielding about ½ ton of ore per fathom. We have commenced to stope from the chiflon below level, where the lode is giving about ¾ ton of ore per fathom. There are also four men stopping in the back of the 40, on the south lode; these stopes are poor.—January Production and Estimated Percentage: 47 tons of 130 per cent.; estimated value of Dulcinea January produce, \$24,320; expenditure, \$10,783; surplus, \$9537. Estimated value of Checo January produce, \$1574.00; expenditure, \$1500.00; surplus, \$74=8960. Estimated loss on silver mine, \$100; total surplus for January, \$8508. Remittance received on March 23, 12477. 8s.

VIRNEBERG COPPER.—R. K. Roskilly, March 30: The lode in the 160 cross-cut, east of shaft, is improving, and yielding good stones of copper; in the 160, south of cross-cut, the lode is without change to notice. The lode in the 140 cross-cut, east of the level south of the shaft, is daily improving, and producing good saving work for copper; here we expect to lay open a good section of ore ground. Other places are much the same as when last reported on. Satisfactory progress is being made in the dressing department, and we are working overtime every day in order to make up for the time lost during the repairing of the boiler.

[For remainder of Foreign Mines see to-day's Journal.]

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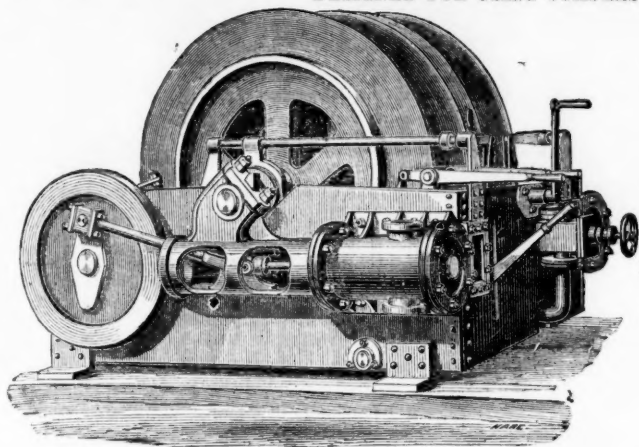
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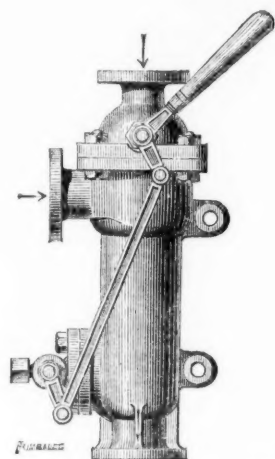
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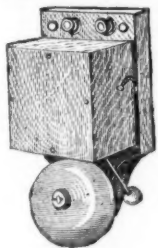
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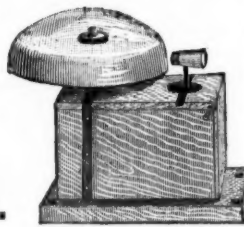
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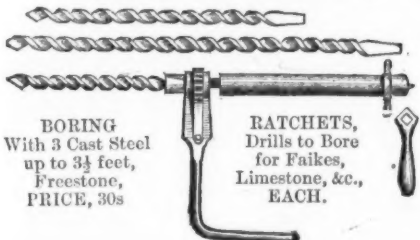
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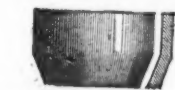


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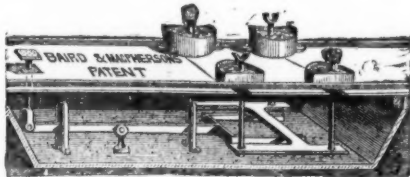
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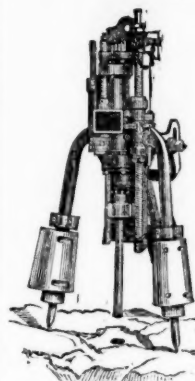
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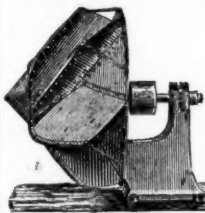
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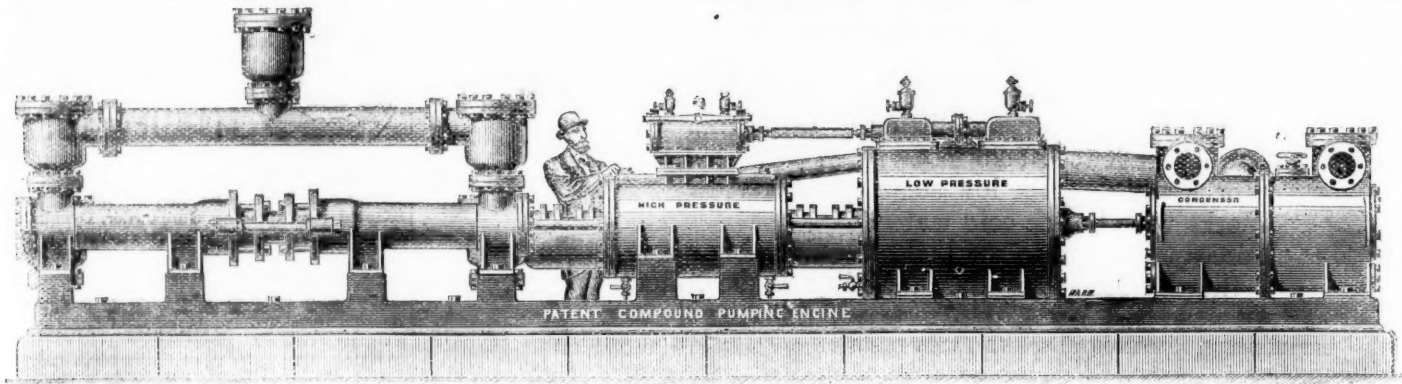


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This Engine will be found the most simple and economical appliance for Mine Draining, Town Water Supply, and General Purposes of Pumping ever introduced, and as regards Mine Draining, the first cost is very moderate compared with the method of raising water from great depths by a series of 40 or 50 fm. lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pitwork, are required, while they allow a clear shaft for hauling purposes. In this Engine the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere.

The following first-class Testimonials will bear evidence as to the efficiency and economy of the Engine:—

TESTIMONIALS OF TANGYE'S COMPOUND PUMPING ENGINE.

21' Newcastle and Gateshead Water Company, Newcastle-on-Tyne, Oct. 20, 1879.
36" x 10" x 48" COMPOUND CONDENSING STEAM PUMPING ENGINE.

Messrs. Tangye Brothers.
GENTLEMEN,—In reply to your enquiry as to the efficiency of the two pairs of Compound Condensing Engines recently erected by you for this company at our Gateshead Pumping Station, I have great pleasure in informing you that they have far surpassed my expectations, being capable of pumping 50 per cent. more water than the quantity contracted for; and by a series of experiments I find they work as economically as any other engine of the compound type, and will compare favourably with any other class of pumping engine. By the simplicity of their arrangement and superior workmanship they require very little attendance and repairs, and the pumps are quite noiseless. A short time ago I had them tried upon air by suddenly shutting off the column, and found they did not run away, thus showing the perfect controlling or governing power of the Floyd's Improved Steam-moved Reversing Valve. I will thank you to forward the other two pairs you have in hand for our Benwell Pumping Station.
(Signed) Yours respectfully,
JOHN R. FORSTER, Engineer.

21' The Chesterfield and Boythorpe Colliery Company (Limited),
Registered Office, Boythorpe, near Chesterfield, Oct. 1, 1879.
36" x 12" x 48" DOUBLE RAM COMPOUND CONDENSING STEAM PUMPING ENGINES
Messrs. Tangye Brothers. Supplied in January, 1878.

GENTLEMEN,—Referring to the above, which we have now had working continuously night and day for the last 12 months, we are glad to say that it is giving us every satisfaction. It is fixed about 400 feet below the surface, the steam being taken down to it at pressure of 45 lbs. per square inch. We can work the pump without any difficulty at 28 strokes per minute—224 ft. piston speed. The pumping power is enormous. The vacuum in the condenser being from 11½ to 13 lbs. The pump is easily started, and works well and regularly. The amount of steam taken being much less than we anticipated. We consider the economy in working very satisfactory indeed. The desire for power and economy at the present day will certainly bring this pump into great requisition.
Yours truly,
(Signed) M. STRAW, Mana

SIZES AND PARTICULARS.

Diameter of High-pressure Cylinder.....In.	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Ditto of Low-pressure Cylinder	14	14	14	18	18	18	18	21	21	21	21	24	24	24	24
Ditto of Water Cylinder	4	5	6	5	6	7	8	6	7	8	10	7	8	10	12
Length of stroke	24	24	24	24	24	24	24	24	24	24	24	36	36	36	36
Gallons per hour approximate	3000	6100	8800	6100	8800	12,000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Height in feet water can be raised with 40 lbs. pressure per square inch in } Non-condensing...	360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto ditto—with Holman's Condenser...	480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto ditto—with Air-pump Condenser...	600	384	267	600	417	306	335	600	440	337	216	600	459	203	203

CONTINUED.

Diameter of High-pressure Cylinder	16	16	16	16	18	18	18	18	21	21	21	24	24	24	30	30
Ditto of Low-pressure Cylinder	28	28	28	28	32	32	32	32	36	36	36	42	42	42	52	52
Ditto of Water Cylinder	8	10	12	14	8	10	12	14	10	12	14	10	12	14	12	14
Length of stroke	36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate	15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,950	35,225	47,950
Height in feet water can be raised with 40 lbs. pressure per square inch in } Non-condensing...	360	230	160	118	456	202	202	149	397	276	202	518	360	264	562	41
Ditto ditto ditto—with Holman's Condenser...	480	307	213	154	603	339	269	198	528	363	269	691	480	352	750	550
Ditto ditto ditto—with Air-pump Condenser...	600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	689

PRICES GIVEN ON RECEIPT OF REQUIREMENTS.

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

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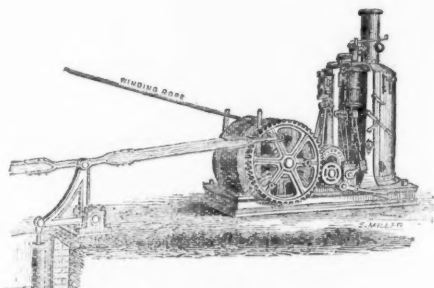


PRICE LISTS AND
PARTICULARS
ON APPLICATION.

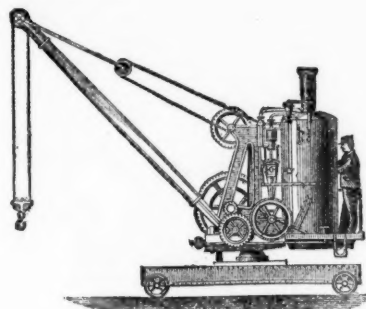
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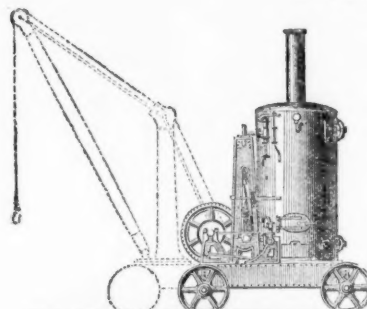
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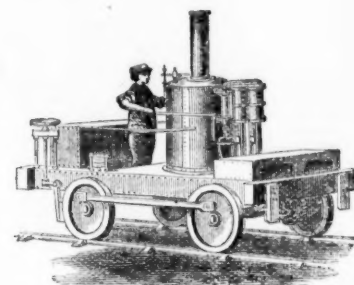
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For Wharf or Railway.



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With or without Pillar and Jib.



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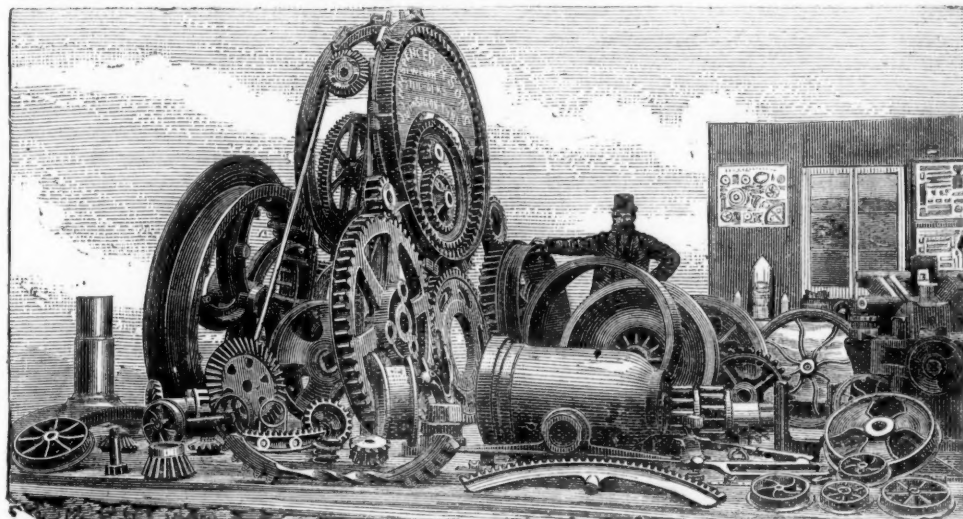
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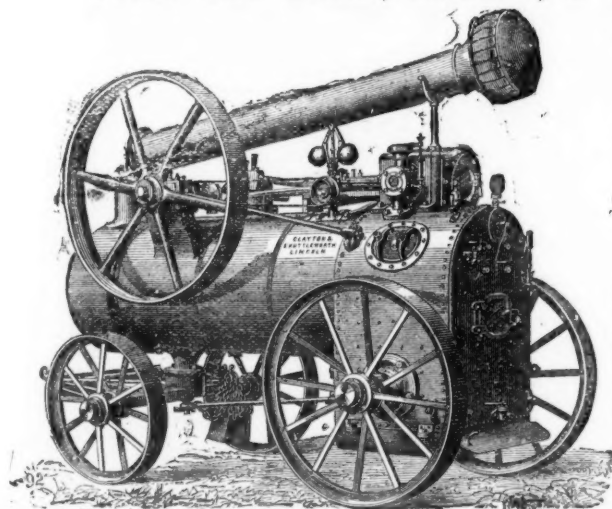
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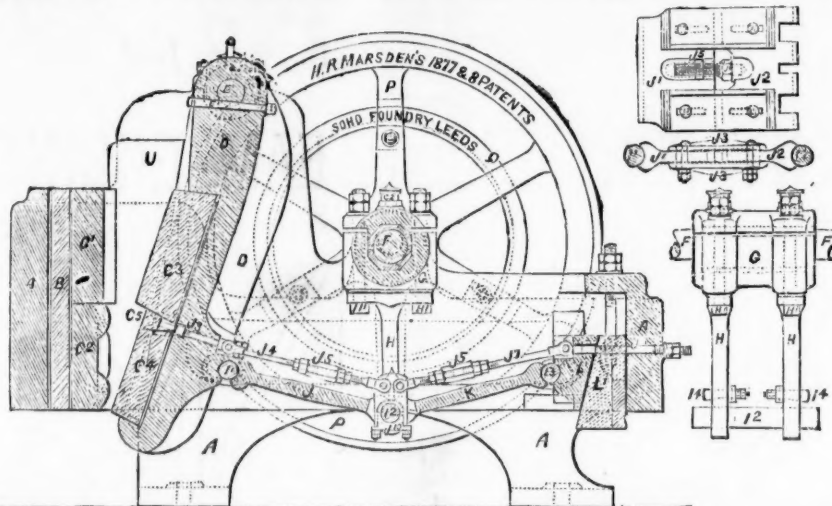
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CATALOGUES, TESTIMONIALS, &c.

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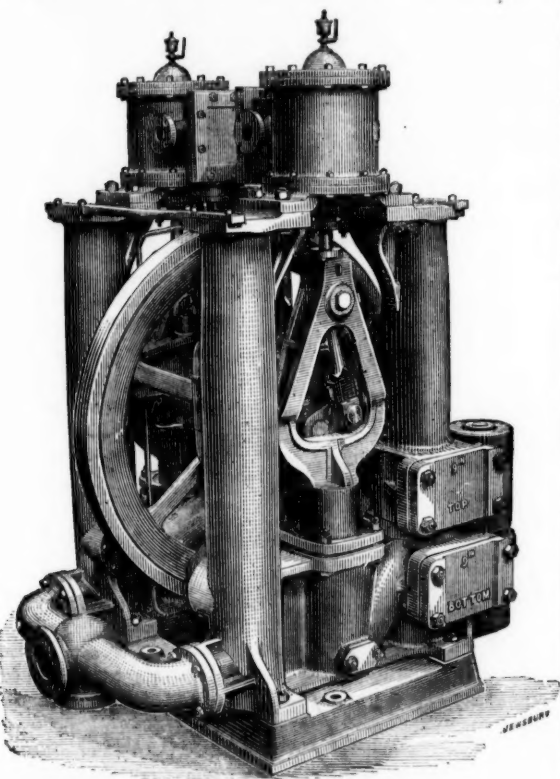


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